Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 15, Number 1 **Fall 1995**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600 612-335-2323

6:00 PM—Board Meeting, Room B
6:30-7 PM—Socializing, Room A
7-8 PM—Regular Meeting, Auditorium
8-9 PM—Refreshments, Room A
9 PM— Doors close sharply at 9 PM

October 5—Shirley Shirley, author of *Restoring the Tall Grass Prairie;* Mike Marxen, *Landscaping MVWR Building.*

November 2—Margaret Kuchenreuther
Topic to be announced; Seed Exchange

December 7—Bea Smith, author of *The Painted Herbarium;* POM: Lisa Mueller—Leedy's roseroot.

January 4—Kathy Boleen, *Exotic and problem plants in Minnesota state parks and natural areas*

February 1—John Tester *Ten Thousand Years and Fifty Miles;* POM: Hannah Dunnevitz

March 7—Susan Galatowitsch *Wetland Restoration: Sedges have edges but edges don't have sedges;* Annual Meeting.

April 4—David Augustine, *Effect of Deer Browse in the Big Woods;*
POM: Bill Capman, *Silphium*

May 2—Plant Sale and Slide Show

Deadline for Winter Issue is December 1, 1995.

To pool rides to the **Minnesota Valley National Wildlife Refuge,** please call—well in advance—Grace Gray who will coordinate pooling

Biodiversity and Native Plants: What's the Connection?

by Char A. Bezanson

Biodiversity, native plants, introduced species, exotic plants—if you are interested in natural areas or even in gardening or landscaping, these are words you have probably run across. But exactly what are the issues here, and how are they related?

What is Biodiversity? Biodiversity refers to the genetic variation of all life on Earth. The diversity of life is what makes it sustainable; when conditions vary, some individuals in a population may possess traits that will help them to survive and reproduce. If you collect seeds from the wild, for example, you know that often it won't germinate evenly, or under all conditions. Some seeds may germinate soon after maturing. Some may germinate the following year. Some may require a period of cold to break dormancy, whereas others may remain dormant for years. Seeds collected from plants in Minnesota often require a cold treatment: if seeds germinated immediately after maturation, say during a nice warm week in September, the entire generation of seedlings could be killed by an early winter frost. But in some years, there might be an extra-long growing season, and seeds that germinated immediately might have had time to grow, flower, and set seed before winter. Because plants can't predict the weather with any more certainty than we can, there is enough variability built in to ensure that at least some plants will survive drought, flood, cool weather, or any number of possible conditions.

Natural vs. economic plants. Natural populations of organisms are more diverse than crop or horticultural cultivars which have been manipulated by humans for their own reasons. A field of genetically identical hybrid corn or vegetatively propagated potato

*(continued on page 4, **Biodiversity ...**)*

Please note that the Minnesota Valley National Wildlife Refuge is only available to us on **Thursday** evenings, so all meetings in the 1995-1996 year will be held on the **first Thursday of the month.**

Editorial

Endangered species revisited

The US Supreme Court in June ruled that altering an endangered species habitat has the same effect as harming the species and therefore can be prohibited under the Endangered Species Act (ESA). This means that the Department of Interior can continue its policy of banning destruction of habitat on private property. Morever, the Department of Interior includes "significant habitat modification" in its interpretation of *harm*. This is a signal victory in the environmental movement but Congress has not yet reauthorized ESA. There still are critics of the ESA.

Environmental scientist Daniel Botkin, in his book *Our Natural History*, reminds us that it is difficult to determine whether plant or animal species are endangered when we don't know their populations prior to human settlement. He doubts that there is a "natural abundance"—only a changing abundance—and whether we even know what "natural" means.

We assume that presettlement conditions represent optimum habitats for all species, and that to save an endangered species we need to restore the habitat to those conditions. But what were those conditions? How resilient is nature? The recent eruption of Mt. St. Helens illustrates that life forms have returned to the mountain slopes in just 4 years after the eruption.

How fragile are species? A population that has existed for thousands of years may be resourceful enough to have individuals in that population that can survive daunting conditions. What is the minimum population size that is self-sustainable and still provides sufficient genetic variation, asks Botwin. These are tough questions.

Botkin also concludes that humans must be figured in as part of the balance-of-nature. Lewis and Clark reported that nature alone can be treacherous and unpredictable.

In our zeal to promote the conservation of endangered species, we need to know more about species, their variability and survivability. We need to educate ourselves about plant diversity in relation to human activities. And we still need to support efforts to reauthorize ESA.

Surfing the Internet for information about native plants and landscaping

Various postings include lists of native plants, sources for seed, discussions of the value of native plants and descriptions of individual projects. Much of this information comes from Australia where there is a large native plant movement and many native plant nurseries! Here are some examples of some sites closer to home that you might want to try if you have access to the World Wide Web.

http://www.umich.edu/~nplummer/Nativeorchids.html Photos of native Michigan orchids.

http://www.prairienet.org/~fletcher/prairie/tgp-09.htm Discussion and pictures of tallgrass prairie plants in Illinois

ftp://h2olily.rain.com/pub/water/ppskcab.txt An essay about skunk cabbage (not a WWW site per se).

http://www.uoguelph.ca/CBS/Botany/fraser1.htm Information about American Ginseng

http://gause.biology.ualberta.ca/devonian.hp/research.html Description of research and activities at the Devonian Botanic Garden in western Canada.

http://www.netins.net/showcase/bluestem/ipnapp.htm Information about an Iowa tallgrass prairie advocacy group.

http://dataadmin.irm.r9.fws.gov/servers.html Server for the Minnesota Valley National Wildlife Refuge. Includes access to information about wetlands.

–compiled by Charles Umbanhowar Jr., St. Olaf College, Northfield, Minnesota.

Minnesota Native Plants is online. See *Minnesota Plant Press*, summer issue 1995 for details. For correspondence to the group send E-mail to MN-NATPL@vm1.spcs.umn.edu

The Minnesota Native Plant Society

Minnesota Plant Press
Thor Kommedahl, editor

Membership dues are $10 per year for regular members and includes subscription to the newsletter; dues for students and seniors are $8, for family $12, for institutions $20, and donors $25. Checks can be made out to: Minnesota Native Plant Society, and sent to : Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

MNPS Board of Directors

President: Char Bezanson,

Vice-President: Charles Umbanhowar,

Treasurer: Ruth Phipps,

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Arden Aamestad,

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The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

MNPS to meet on first Thursdays of the month

The Minnesota Native Plant Society, after years of meeting on the first Wednesday of each month from October through May, is changing its meeting night to the first Thursday of each month, from October through May. This change is due to Federal cutbacks which are making it necessary for our hosting location, the Minnesota Valley National Wildlife Refuge, to eliminate evening hours for the general public, and open for reserved groups such as the MNPS on Thursday evenings only.

Late in July, a letter was sent to the MNPS membership asking members to vote for one of two options: meet at the Refuge Center on the first Thursday of the month, or, meet in a room on the St. Paul Campus on Wednesdays.

As of August 21, the president had received 104 postcards in favor of the Refuge Center on Thursdays, and 31 postcards in favor of the St. Paul Campus on Wednesdays; 21 people indicated that they had no preference, for a total of 156 cards received—a return rate of 50%. Several votes were received by E-mail and tallied separately: 2 for the Refuge and 1 for the St. Paul Campus.

No date, time, or location is ideal for everyone; nevertheless, this response makes the decision of the Board to meet on Thursdays at the Refuge Center a clear one. In comments made, a few people indicated that they would be unable to attend if the day were changed. Some indicated the opposite. We regret any inconvenience this change will cause, but welcome those who will be able to participate as a result of the change. We thank all who responded.—*Char Bezanson, President MNPS*

When Europeans settled Minnesota, the Big Woods—a maple-basswood forest—covered more than 3,400 square miles from St. Cloud to northeastern Iowa, into Indiana. Mature trees were more than 100 feet tall.—*Minnesota Volunteer* 58[342]:49, 1995

Environmental Action Grants for Minnesota Schools

The School Nature Area Project (SNAP) offers grants to K-12 schools for projects benefiting school nature areas and environmental education. Any public or private K-12 school in Minnesota may apply for these grants.

Project grants fund the improvement of native vegetation and wildlife habitat on or near school grounds. Schools or individual classes may apply for cash awards of $500 to $1500. Twenty-four (24) awards are available.

All grants promote participation of local community members in school projects. This is a great opportunity for MNPS members to become involved in native plant education at a local school as advisors and project participants; consider working with teachers at a school near you on a project!

SNAP Environmental Action Grants are made possible through the financial support of the Blandin Foundation of Grand Rapids, Minnesota, and the Minnesota Legislature as recommended by the Legislative Commission on Minnesota Resources from the Natural Resources Trust Fund.

Applications are due December 1, 1995. To receive an application, contact The School Nature Area Project, St. Olaf College, 1520 St. Olaf Avenue, Northfield, MN 55057. Phone 507-646-3599. fax 507-646-3930. E-mail: lamarche@stolaf.edu —*Char Bezanson, St. Olaf College.*

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Call Don Knutson.

This board, displayed again at the State Fair, received another ribbon.

Char Bezanson is the new President of the MNPS, and has been a board member since 1991. She has an MS degree in botany from the University of Minnesota, and works at St. Olaf College in Northfield, currently as an instructor in Science Education and as Site Ecologist for the School Nature Area Project. She has conducted numerous workshops for teachers on plant-related topics, and has recently converted 400 square feet of her lawn to prairie plants by using transplants, growing more than 300 of those plants from collected seed.

Seed Exchange is planned for November 2

MNPS sponsors a seed exchange every autumn. This year, the exchange will take place immediately following the November regular meeting. Seed should be from native plants collected from member's gardens or from the wild. If you are collecting seeds from the wild, please use appropriate conservation measures and collect only a low percentage of mature seed. Seeds should be dry; avoid storing seeds in plastic bags that retain moisture and can cause seed degeneration. Please package the seed for one person, not as a bulk supply, whenever possible.

Label the seed as completely as possible, including scientific and common names, collection site, habitat, date of collection, and the collector's name. Any cultural information you can provide with the seed will be appreciated. First choice of seed will go to the seed contributors, and then the exchange will be opened to all.

Contributors often provide envelopes but members are encouraged to bring their own supply.—*Char Bezanson.*

A seed is a ripened ovule; a fruit is a ripened ovary. Ovaries contain ovules.

Biodiversity and Native Plants

(continued from page 1)
is convenient for the farmer who wants to harvest the crop mechanically, all at once, because all the plants will germinate together, grow at the same rate, and ripen together. Likewise, the nursery that sells ornamental perennials wants to ensure that the plants you buy will have the characteristics that are advertised for the variety: large flowers, double blooms, or lack of thorns, perhaps. They're interested in "quality control", not diversity. The traits favored by humans may affect the plant's function, of course: many garden flowers have increased petals in the flower at the expense of stamens, making them less functional. The color or fragrance may no longer attract pollinators, or the sterile flowers may no longer produce seed, making the plants truly domesticated and dependent on humans for propagation. It's hard to imagine florist's carnations or Thompson's Seedless grapes reproducing in the wild!

Maintaining diversity. One downside of this reduction in diversity is that a disease or disaster that affects one plant is likely to affect them all: this is what happened in the Irish potato famine, in which waves of Irish immigrants came to the United States in the last century. Species extinction, which has been estimated by E.O. Wilson of Harvard University to be occurring at the rate of 70 species per day, reduces diversity. The reasons for this can be summarized by the acronym HIPPO: Habitat destruction, Introduced species, Pollution, Population growth, and Overconsumption. As biodiversity declines, the web of life which supports us all is weakened, and is less able to respond to environmental changes such as global climate change or increased ultraviolet radiation. Managing land to preserve habitat and native species helps maintain the biodiversity we all depend on.

Native Plants. A plant is native to a locality if it evolved in that place. It is fully integrated into the local biotic community. Native plants differ from non-native plants in that they have complex relationships with other local organisms. A native plant may depend on a particular local soil fungus for its nutrition. It may produce a chemical product to protect it from certain local insects; this product in turn may be eaten by a caterpillar, which is then protected from predators because of a bitter taste. It may produce nutritious pollen or nectar as payment for the pollination services of a particular bird or bee, and have a flower adapted to pollen transfer by that animal. It may produce special nutrient packets on its seeds which entice a local species of ant to hoard the seeds underground, planting the seed in just the right place. Because of these many complex relationships, native plants are an integral part of the community, both depending on and essential to many organisms. Native plants seldom grow "out of control", since they regulate and are regulated by populations of these other organisms. Of course, all organisms continue to evolve, and plants have been moving around the world for many centuries. When people talk of native plants, they usually mean plants that are documented to occur in an area before there is extensive disturbance by human activities. In Minnesota, most of these records were made within the last two centuries, especially at the time of the public land survey (1847-1907). Sometimes native plants, or native wildflowers, may be used to mean "native to the United States", such as "native wildflower" seed mixes that include California poppies and Texas bluebonnets. Even within Minnesota, a plant may be native to the state but not native to the locality. Red and white pines, for example, are native to northern Minnesota, but not to the southern half of the state.

Exotic plants. It's hard to discuss native plants without defining a few more terms. A plant is *exotic* if it is from somewhere else. The common plantain that grows alongside the dandelion in our yards came to this continent with Europeans, probably hitching a ride on animals, clothing, and shoes. Because it appeared wherever Europeans went, it received one of its common names "white man's footprint". Although a particular exotic plant may not be a problem—for example exotic orchids in a hobbyist's collection—the word is often used to refer to a plant from somewhere else that is causing a problem as a weed or pest.

Introduced plants. A plant is *introduced* if it was brought here by humans. Often these are cultivated garden plants, both crops and ornamentals; the Norway spruce in many Minnesota windbreak plantings is from Europe. Many culinary and medicinal herbs were also introduced into this country by Europeans.

Naturalized plants. A plant that escapes from cultivation and thrives on its own in the wild is considered *naturalized*. Catnip and motherwort are examples of plants that were introduced by Europeans as medicinal herbs, but which now grow everywhere. Queen Anne's Lace is actually the second-year flower of the carrot, escaped from gardens and growing wild. Wild parsnip is also a garden escapee that grows very well in ditches in Minnesota.

Invasive plants. Some plants are *invasive*, displacing the native vegetation because they compete well, and are not kept in check by balanced relationships with other organisms. If they displace the native vegetation, lack of native plants may reduce the populations of other organisms in the community which depend on them, causing displacement or local extinction. Examples of invasive exotic species that are major problems in Minnesota include European buckthorn, a shrub that was introduced as a hedge-forming shrub and is now displacing native vegetation in woodlands, and purple loosestrife, which escaped from flower gardens and is now taking over
(continued on page 5, column 1)

(continued from page 4)

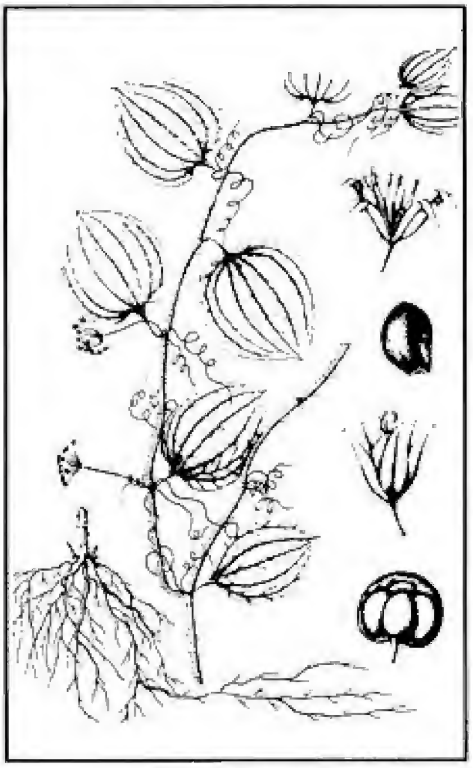
native plants and riverbanks, eliminating diversity in these areas.

Native plant sourcebook. How can we tell if a plant is native to a place? Practically speaking, the easiest way is to find a copy of Ownbey and Morley's *Vascular Plants of Minnesota.* This wonderful resource was prepared by two long-time University of Minnesota botanists—both members of MNPS! The book lists all the Minnesota-collected plants in the University of Minnesota herbarium, and provides distribution maps for each species. The authors indicate when a plant is known to be introduced or naturalized. If you can't find a copy in your local library, a call to the University herbarium can probably help you out.

Planting native plants. One way to help preserve both biodiversity and natural habitats for all kinds of organisms is to use native species in landscaping. If chosen appropriately, native species have the advantage of being adapted to local soils, climate, insects, and other conditions, so they are usually quite easy to care for, once established. Prairie grasses and flowers, for example, have extensive root systems going as deep as 15 feet, which enables them to survive summer dry spells without supplementary watering. There are potential pitfalls to consider, however. As native plants are not substantially altered by humans, they have the potential to interbreed with local populations of the same species, producing viable seed. If the plants in your prairie planting, for example, are of a species native to Minnesota but from a seed source in Nebraska, your planting has the potential to affect the genetic makeup of a nearby native prairie. Professional opinion differs on the importance of this issue. What may be an important consideration when enhancing or restoring a sizable native plant prairie may be less important in a backyard butterfly garden, but it is generally a good idea to obtain plants and seeds from sources close to your site whenever possible.

Learning native plants. Studying a state or county park or local natural area as a model for your site is an approach to designing a native planting; working with reputable native plant nurseries and consultants is another way. Courses, lectures and books on native plants, field trips with MNPS and other organizations, and your own observational skills will help. Choosing and using native plants is not as easy as a trip to the local garden center, but the process of learning about plants of your area and their relationships with other organisms is a rewarding one, and a process that MNPS is all about.

Char Bezanson is an instructor in St. Olaf College, in Northfield, Minnesota, and site ecologist for the School Nature Area Project.



Smilax hispida
bristly greenbrier

A prickly vine native to Minnesota Stems are bright green in winter.

Plant Lore

What is vervain?
Vervain is a member of the genus *Verbena* which means "sacred plant". Blue and white vervains are abundant and native in Minnesota.

Why was it thought of as sacred?
Verbenae, in Latin, were the sacred boughs of laurel, olive or myrtle used in religious ceremonies. The plant also had many uses in medicine and even as a love potion.

What are the common vervains in Minnesota?
Blue (*Verbena hastata*) and white (*V. urticifolia*) are two kinds frequently found in the state, but not in the same habitat. Blue vervain is found in poorly drained, wet soils whereas white vervain grows in dry soils. Blue vervains are surrounded by joe-pye-weed, reed canary grass and maybe alders whereas white vervains have goldenrod and dryland grasses as neighbors.

What kind of a plant is vervain?
Both of these species are perennials and grow from two to six feet tall. They begin to flower in midsummer and continue for up to three months, ending around September. Flowers are small and numerous on stems and seeds are dispersed by simply falling to the ground.

Can white vervain be confused with nettle?
Not really. True, the leaves resemble nettle leaves; however, stems of nettles are grooved and covered with hairs whereas vervain stems are square and smooth. The whitish down seen on vervain stems in fall is powdery mildew—a fungus.

What medicinal uses are there?
Native Americans used blue vervain tea for colds, coughs, fevers, bowel complaints, dysentery, stomach cramps, and in large doses, an emetic. Roots were said to be more active than leaves.

Minnesota Native Plant Society
University of Minnesota
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St. Paul MN 55108

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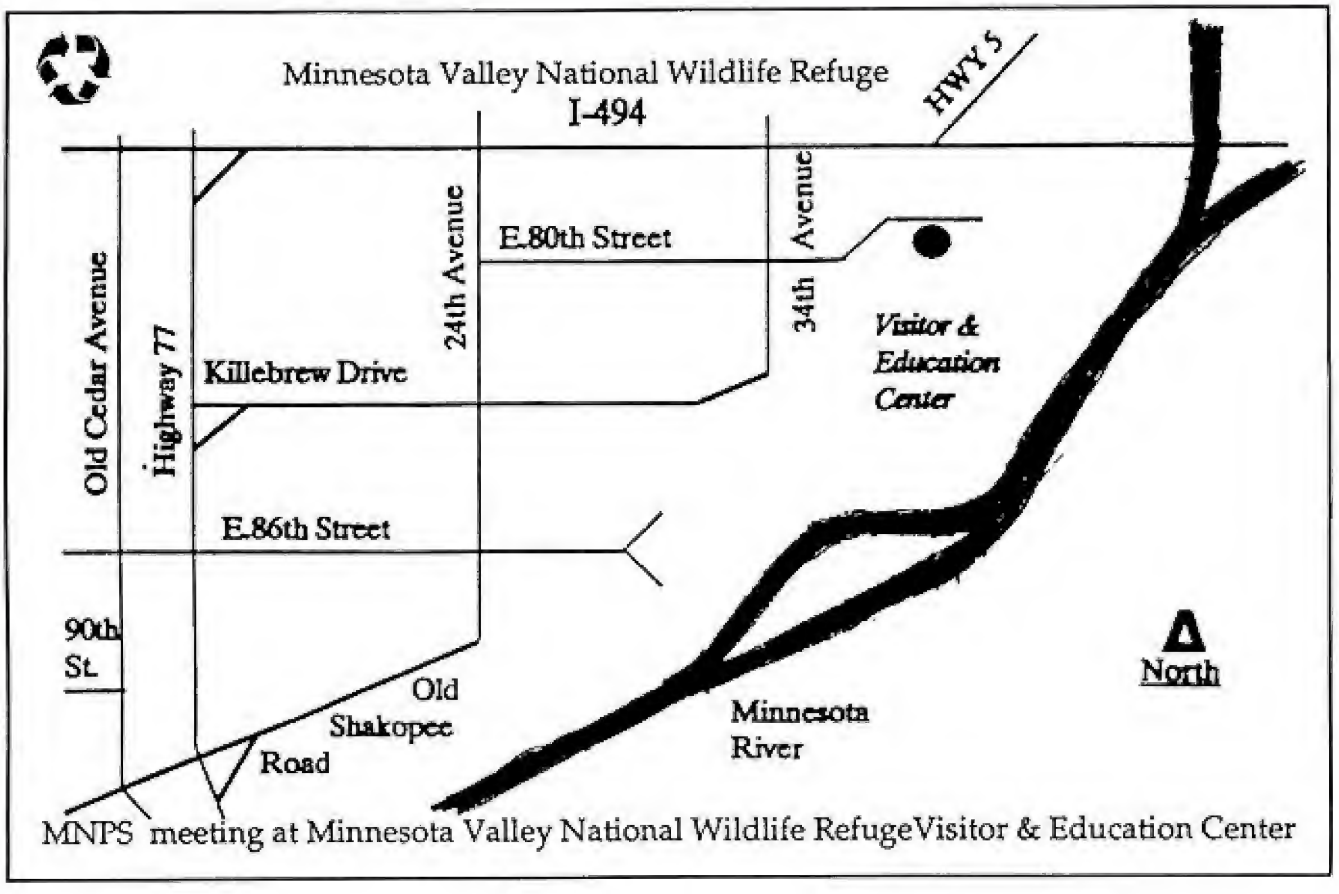

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February 1—John Tester, *Ten Thousand Years and Fifty Miles;* POM: Hanna Dunnevitz—*Lesquerella ludoviciana* (bladder pod)

March 7—Susan Galatowitsch, *Wetland Restoration: Sedges have edges but edges don't have sedges;* Annual Meeting.

April 4—David Augustine, *Effect of Deer Browse in the Big Woods;* POM: Bill Capman, *Silphium*

May 2—Plant Sale and Slide Show

POM=Plant of the Month

Deadline for Spring Issue is March 15, 1996.

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•For **Winter Weather Emergency, contact** Diane Hilscher, to find out if the Center is open or not

Restoration of the Prairie

by Shirley Shirley

As we think of the value of the prairie, it is enough reason for many of us to save the native plants for historic and esthetic reasons. However, when we are confronted with the question of why is the prairie of value, there are many more reasons. The Native Americans and pioneers used many native plants for food and medicine, and we need to preserve the plants for added research. One available in capsule form is *Echinacea purpurea*, purple coneflower, used to aid the immune system. Regarding the environmental issue, prairie plants lessen the need for chemicals, watering and mowing. They provide for cleaner air and water and they build soil. Wildlife and insects are dependent on prairies for cover, food, and mating habitats. Along the roadsides and on farm terraces and waterways, there are many benefits. In these areas, native grasses are more beneficial than many of the alien species present.

Importance. Research has been done to show the benefits of growing switch grass, Indian grass, and big bluestem for cattle grazing. Stephan Barnhart has his findings in pamphlet Pm-569, updated October 1994, available from Iowa State University, Extension, Ames, Iowa 50010. Laura Jackson from the University of Northern Iowa is studying the use of Illinois bundle-flower, a legume, for its use in rotational grazing. David Zahrt has

(continued on page 4, column 1, Restoration...)

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Editorial

Extinction by hybridization?

Human activities can result in extinction of native plant species; however, plants can also become extinct by hybridization reports Loren H. Rieseberg of Indiana University. If a population of plants grows near to plants of the same genus of rare plants, and frequent cross pollination occurs between species, some species may become extinct. At least 19% of rare plant species in California are capable of hybridization. If the hybrids are less fit than the parent plants, the rare plant may become extinct. On the other hand, if the hybrids are more fit than the parent rare species, the rare plants could disappear by genetic assimilation.

Can such a situation be prevented? Transplanting rare species means change of habitat and possibly loss by inability to adapt to the new location. Disease may be present in the new location that could destroy the population. Competition with other plants or with weeds can be hazardous to survival of the transplanted species. With increasing disturbance of the habitat, the chance that closely related species may become contiguous with rare species may also increase.

Although this is the process of evolution and is effective in survival of the genus or species, certain genes may be lost or are not apparent.

This adds another dimension to diversity and survivability in nature. Does establishing or restoring native habitats increase accessibility of the rare plants to hybridization with closely related species? Is this a cause for concern? It emphasizes again the need to know species, their variability, and their ecology. Some species seem to hybridize more readily than others, and this is more likely at the centers of origin of a species. Here diversity is the greatest and the gene pool probably the greatest also to make possible production of new variants that are better able to survive changes in the environment.

Some discussion of these views, as well as some examples, are described in *BioScience* (45:744-745, 1995).

Board Briefs

•Don Knutson volunteered to aid the security person for the National Wildlife Refuge Visitor Center during the MNPS meetings.

•Appreciation was expressed to Becky Shirber for her efforts in promoting the orientation manual and the GAP Committee.

•Treasurer Ruth Phipps reported $900 in new memberships in October.

•Fact sheets about native plants are being considered for distribution by the MNPS.

•Attendance was 117 for October 5, 76 for the November 2, and 73 for December 3 meetings.

•Only about one-third of the 354 members attend meetings. Increase in 50 members a year may not be noticeable because of a comparable drop in membership.

•A Speakers Bureau is under consideration. Other groups are being studied for ideas.

•Setting up a budget received high priority. Should dues be increased?

•The Operations Manual is being prepared. Some items have not yet been submitted.

•If attendance exceeds capacity of the Visitors Center, a new location will be needed. Any suggestions for another site?

•Appreciation was expressed to John and Jackie Buffalow for taking care of refreshments each meeting.

•Don Knutson agreed to be the Symposium Coordinator for 1996.

•The Board agreed to solicit activity by the membership to monitor two gardens at the Refuge Center. Char will write an article for the MPP.

The Minnesota Native Plant Society

Minnesota Plant Press
Thor Kommedahl, editor

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MNPS to Adopt Refuge Educational Gardens: Opportunity for Hands-On Involvement

Char A. Bezanson

The Minnesota Valley National Wildlife Refuge has invited the Native Plant Society to participate with them in a native plant education project involving the adoption of several native plant gardens on the Refuge grounds. The Refuge is putting together a comprehensive land use plan for their grounds, which will include design plans, seasonal work and maintenance plans, species lists, and goals for each of twenty-one Landscape Units on the Visitor Center grounds. Since the Refuge is a National Wildlife Refuge and is visited by many people each year, the educational potential for each of these areas is high.

Some of these Landscape Units will be adopted by organizations with particular interest or expertise in native plants, native plant gardening, or landscaping for wildlife. The Native Plant Society has been asked to adopt the Classroom Garden, a shady woodland garden directly outside of the classroom where we have our after-meeting social gathering, and the Prairie Plant ID Garden, which is immediately to the left of the Main Visitor Center Entrance. Both of these areas have high visibility, and high potential for visitor education about Minnesota native plants from two different plant communities.

The Board of Directors sees the opportunity to work with these areas as an honor and an opportunity for our members to contribute to the Society's mission of education, both to the general public and within the Society. Work with these gardens will begin in spring, when we will evaluate the present condition of each area and determine which species are currently growing there. Some of this work has already been completed by Refuge personnel.

A planning group for each garden will then meet with Mike Marxen, a U.S. Fish and Wildlife Service landscape architect, and Judie Miller of the Refuge staff. This group will determine what work needs to be done, and what species of native plant should be added to each area. The Refuge will provide tools and other resources, and the Society will locate and donate or purchase plant material. Eventually, maintenance plans will be written for each garden. Gardens will be monitored by Society members and maintained by Refuge volunteer groups overseen by Refuge staff, and by Society members as desired.

For experienced native plant gardeners, work on these gardens represents an opportunity to share their expertise in a hands-on, workshop setting. For members who have little personal experience but are anxious to learn about native plants and their culture, it represents an opportunity to trade energy and enthusiasm for a personal learning experience. For all who become involved, it can be an opportunity to spend quality time with like-minded native plant fans!

We will be looking for volunteers for these projects in four categories: Experts, Organizers, Laborers, and Learners. While these categories will undoubtedly overlap, we're hoping to have a number of volunteers in each role. You are an "expert" if you have either personal experience or training with native plants and native plant gardening. Don't underestimate your abilities here—you won't be alone, and you'll have access to all of the expertise of the Society! You are an "organizer" if you are willing to make phone calls, schedule meetings, and generally keep tabs on progress. You are a "laborer" if you are willing to get your hands dirty. And everyone who becomes involved will be a "learner".

I already have had several people volunteer to be learners and laborers. If you are interested in working on either of these projects, feel free to contact me or any board

*(continued column 3, **Adopt Garden**)*

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Call Don Knutson

Any field trip leaders ?

If anyone is interested in leading a field trip for spring or summer, please contact Nancy Albrecht

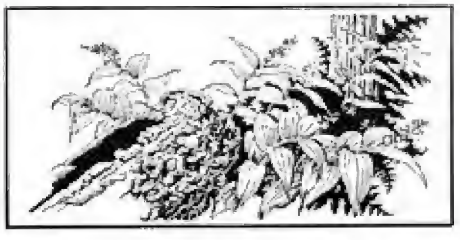
Letters

"In the *Plant Lore* column [MPP] discussion of white sage, it was mentioned that Native American tribes used this plant. Putting the discussion in the past tense implies that they no longer use the plant today for ceremonial and other purposes. This, of course, is not true. The ceremonies are still conducted; sage is still used."—Pat Ryan, Cottage Grove.

(ed: we appreciate the comment)

***(Adopt Garden**, from column 2)*

member in person, by E-mail or by phone. We also will be sending a sheet around at the next meeting. We hope to include related background topics in the Spring Symposium, so pass along any suggestions you have to a board member or to Don Knutson, Symposium Coordinator. Here's looking toward spring!



(from page 1, Restoration...)
received a grant for sustainable agriculture to remove trees and to study grazing on his farm property in the Loess Hills of Iowa. The prairie does have economic value!

Education. We must personalize the prairie by taking people to prairie remnants and reconstructions to acquaint them with the diversity and tenacity of plants. Many do not know the difference between alien and native plants, and we must first bring about this understanding. In Iowa there are 265 forbs and 72 grasses. Through the media, including internet, we have the ability to reach many people. The Minnesota/DOT brochure "Prairie Wildflowers Native to Minnesota's Natural Regions" contains an excellent list of native varieties for dry, mesic, and wetland areas in six regions of Minnesota. Sources for native seed must also be addressed.

Planning. In planning your reconstruction, an analysis of your site for soil, moisture, and sun is important so that the proper seed selection can be made. A diversity of at least 35 species in a planting will help form plant communities and fill all the available spaces to eliminate weed growth. Native seed sources are increasing with the added interest and need. We are seeing more efforts of farming native seed with farm machinery for this purpose. To further help others to understand the growth of prairie plants in relation to establishment, the Mn/DOT has done an excellent job with the brochure "Native Grasses: Why all the Fuss?" It explains how the deep roots of the native warm-season, bunch-forming grasses can eliminate the rhizomes and stolons of cool-season grasses. This is important to understand because our number one problem in establishment of prairie plants is weeds. Preparation of the soil to eliminate weeds and mowing plants to 3-inch heights in the first year—when weeds normally become 12 inches tall in the first year—and once in the second year in early June. This is essential to obtain the maximum growth of a reconstruction. However, studies have been done with minimal management over a period of 5 years by overseeding to compete with weeds. There are as many good techniques for reconstructing tall grass prairies as there are people doing them.

Management. When the prairie becomes established, burning is the technique of choice for management. Controversy has arisen on how often to burn, and today some are advocating less frequent burning to protect the animals, birds, and insects that depend on the prairie. It is important to understand breeding habits and to rotate or burn early to avoid disrupting these habits. The larger we can make our reconstructions the more endemic life that can be supported. The Walnut Creek National Wildlife Refuge in Prairie City, Iowa, is reconstructing 13 square miles of native prairie to support, for example, buffalo, prairie chickens, and the regal fritillary butterfly, who are dependent on prairie.

Landscaping. Not everyone is interested in attending prairie walks, so we must bring the prairie to areas of high visibility for them. Landscaping on public and private land in town has many benefits. I am involved with three such projects in my hometown of Eldora, Iowa, with a population of 3,000. On my 10 by 60 foot roadside prairie in front of our home in town, I had 67 species bloom this year. This project was started from seed, mostly indoors, and seedlings were planted in an arranged landscape. A grant of $2,500 from US West and additional funds of $1,000 raised by 60 students in the sixth grade, made possible a project on controlled landscape with 31 forbs and 4 grasses in our city park. The 200 forbs were purchased from Prairie Moon Nursery in Winona, Minnesota, and nearly every plant bloomed in the first year. Many species would have required 5 to 6 years to bloom from seed. Our third project is a 5-acre prairie to be planted in spring with a grant from Iowa/DOT on Eldora's western gateway to the city, on property owned by the state at the location of the Iowa State Training School for Boys.

Trees For Ever, Master Gardeners, and the Iowa Prairie Network are involved in a $15,000 project for a large, reconstructed landscape along the highway using native trees, shrubs, and prairie plants.

The Future. In Iowa, it is our vision to increase prairie from the present 0.1 to 1-2% by the year 2000. If the 600,000 acres of roadsides alone were planted to native seed, we would have quite a connection for our isolated prairie remnants. Looking at these greater efforts must include increased use of farm machinery in seed production. With public and private groups working together, such visions can become a reality.

This is a summary of a presentation made by Iowan Shirley Shirley at the October 5, 1995 meeting of the Minnesota Native Plant Society. Ms. Shirley is author of the book Restoring the Tallgrass Prairie: An Illustrated Manual for Iowa and the Upper Midwest.

Northern Monkshood

(continued from page 5, column 2)

bedrock substrates on which it occurs. Because *Aconitum noveboracense* possesses many characteristics that make its population resilient, the species is likely to escape extinction in the foreseeable future if resources are made available simply to preserve as many populations as possible. Much progress has been made to date through the combined work of The Nature Conservancy, and state, county and federal agencies, most notably through the establishment of the Driftless Area National Wildlife Refuge system.

This is a summary of a presentation made at the Minnesota Native Plant Society meeting of December 7, 1995, by Margaret Kuchenreuther, assistant professor, University of Minnesota, Morris, Minnesota.

A Painted Herbarium— The Life and Art of Emily Hitchcock Terry

by Beatrice Scheer Smith

Emily Hitchcock Terry (1838-1921) was the scientifically and aesthetically gifted daughter of a highly intellectual and artistic Massachusetts family. An early graduate of Mount Holyoke College, she began her formal study of art at The Cooper Union in New York City in 1865, where her training in drawing and watercolor painting was influenced by the Pre-Raphaelite movement. In 1872, Terry and her husband, a Congregational minister who was ill with tuberculosis, and their infant son came to Minnesota seeking recovery for Reverend Terry and his return to good health. Emily Terry was trained in botany as well as art, and while in Minnesota she collected and painted the flora. In 1881 Reverend Terry died and Emily returned to New England where she pursued her avid interest in botany for another 40 years, studying principally the ferns of Vermont.

When she left Minnesota, Terry took with her her portfolio of watercolor paintings of the flora of Minnesota and other areas that she had visited with her husband as they sought a cure for his illness. Rather than creating a conventional herbarium of pressed specimens, she created a "painted herbarium". The collection contained 142 paintings, 46 of them of the Minnesota flora done from life. These images are fine examples of the art of botanical illustration and are the earliest known illustrations of the flora of the state.

Terry's passion for botany—"As long as I live I shall work in botany, if I have any eyes to see"–was communicated to others through her artistic talent. Her contribution to Minnesota's botanical history is unique. Her story, however, stands alongside those of countless women throughout history whose contributions have yet to be recognized. Terry presented her "painted herbarium" to Smith College, Northampton, Massachusetts, in 1913, where it is housed in the rare book collection. Examples of her specimen sheets of Vermont ferns are preserved in the herbarium of the Smith College Department of Botany, as well as in the Gray Herbarium at Harvard University.

This was a summary of a presentation made by Beatrice Smith at the November 2, 1995 meeting of the Minnesota Native Plant Society. She is the author of the book entitled "A Painted Herbarium—The Life and Art of Emily Hitchcock Terry (1838-1921)" published by the University of Minnesota Press in 1992.

Watch for news of the Spring Symposium!

Algific talus slopes and a Pleistocene relict: northern monkshood

by Margaret Kuchenreuther

Northern monkshood (*Aconitum noveboracense* Gray) is a Pleistocene relict that is dependent for its existence in the Midwest on the unique microclimate provided by algific talus slopes and maderate cliffs. These are rare geologic features that are found on several bedrock formations scattered throughout the recently unglaciated area known as the Driftless Area. All are characterized by low substrate temperatures and high relative humidity

This long-lived perennial has a complex life history. Plants have the potential to reproduce by seeds, as well as asexually through the production of aerial and subterranean bulbils and adventitious root buds. A 3-year study of eight populations, occurring on four bedrock substrates in Iowa, was made from 1987 to 1989. It revealed that the expression of each of these reproductive modes correlates with the type of substrate upon which the population grows. Plant stature and population structure are also influenced by substrate type. Warm algific slopes support dense populations of large plants that have high fruit and seedling production. These plants seldom produce bulbils and have only moderate numbers of stems per clump. In stark contrast are populations on the coldest algific slopes, which support much smaller plants that produce many fewer fruits and seedlings. However, plants in these populations often bear large numbers of bulbils and have large numbers of stems per clump. Cliff populations are the least dense and are morphologically intermediate to plants in the other populations. They have moderate-sized plants that often are multiple stemmed, but rarely produce bulbils. They produce intermediate numbers of fruits but few seedlings, probably because the seeds are shed largely into unfavorable habitats over the cliff. Whether these differences are a plastic response to variable environmental conditions, or whether they are under genetic control is a question that awaits further study.

By chance, the study period coincided with one of the most extreme drought periods in Iowa history, thus providing an opportunity to observe how these populations respond to environmental stress. Surprisingly, several of the populations (especially those on the coldest sites) were able to maintain near stable growth rates during this exceptionally stressful period, even those populations with negative growth rate. Indeed, visits to the sites since 1989 reveal that these surviving plants are the means by which the populations can recoup their losses.

Demographic and genetic evidence suggest that a preserve system could capture a maximum amount of diversity of life history and genetic variation found in the species by scattering preserves throughout the species' range, and including examples of all of the

(continued on page 4, column 3, Northern Monkshood)

Botannical Potpourri—Gleanings from Newsletters

•A brush pile is a place of life, death, and regeneration...it provides for wildlife and rejuvenation of the forest; and it can be a source of entertainment and learning.—Virginia Department of Forestry, 1995.

•The University of Michigan Herbarium has been completely renovated. For information or to visit, contact Richard K. Rabeler, rabeler@umich.edu

•According to the Minnesota County Biological Survey, less than 1% of the Big Woods (maple-basswood forest) remains in Hennepin County in 1995. The Big Woods covered nearly half of Hennepin County 150 years ago.—State of Minnesota, Department of Natural Resources, 1995.

•The rough-seeded fameflower (*Talinum rugospermum*), a rare species, was found in Minnesota for the first time in 1832 near Taylor's Falls by Douglas Houghton. It was found this summer by Nancy Falkum at the Kellogg-Weaver Dunes.—*The Nature Conservancy Minnesota Chapter*, Fall 1995.

•"There is no 'natural' state in nature; it is a relative concept. The only thing natural is change, sometimes somewhat predictable, oftentimes random, or at least unpredictable."—Robert T. Lackey, in *River Almanac*, August 1995.

•In peatlands and other relatively sterile settings across the world, there are 450 vascular plant species that compensate for the nitrogen-poor environment by "eating" small invertebrates reports Bonnie Heidel in *Kelseya* (vol. 8, no. 4, 1995).

•The common ragweed *Ambrosia artemisiifolia* and giant ragweed *A. trifida* are among the few native North American plants that became dominant weeds when the Europeans came to settle this country according to Edward Cushing of the University of Minnesota.(*The Pollen Monitor* 2[3]: 1-3, 1995).

•The goblin fern (*Botrychium mormo*) is a tiny, 2-inch grass-like fern that has become the most celebrated rare plant of the Chippewa National Forest in Minnesota. The Chippewa Forest has 74% of the known goblin fern locations in the world, and northern Minnesota is home to more than 90% of the world's known population according to Jim Gallagher and John Casson, Wildlife Biologists, Chippewa National Forest (National Forests in Minnesota, Annual Report '94)

•Running buffalo clover (*Trifolium stoloniferum*) was thought extinct until 1983 when it was rediscovered in West Virginia. It has since been found in Ohio, Indiana, Kentucky and Missouri. (*Nature Conservancy* 4[1]:27, 1996)

•The higher the root order, the more nitrogen it contains reports Kurt Pregitzer of Michigan Technological University at Houghton. He studied roots of yellow violet, maple-leafed waterleaf, sugar maple and white ash. (*BioScience* 45:749-750, 1995)

•Mycorrhizal fungi enhance growth of Sitka spruce and Japanese larch seedlings if soils also contain insoluble organic and inorganic phosphorus report C. McElhinney and D.T. Mitchell of the University College of Dublin, Ireland. (*Mycorrhiza* 5: 409-415, 1995)

•Minnesota had about 18.5 million acres of wetlands in 1950 and this has been reduced to 7.5 million acres by the 1980s according to T.A. Wenzel and D.H. Behm of the Minnesota Board of Water & Soil Resources, St. Paul. The wetland restoration component of the Reinvest In Minnesota (RIM) Reserve Program acquires conservation easements to restore drained wetlands and enable conversion to their natural state. (*Journal Minnesota Academy of Science* 59[4]: 41-42, 1995)

Plant Lore

What are asters?
Asters are in the genus *Aster*, a composite, recognized by their star-shaped flowers with yellow centers but ray flowers that are never yellow. Aster is the Greek word for star.

How many asters are there?
There are hundreds of species, which are difficult to identify, made more difficult by their tendency to hybridize. A well-known native aster is the New England aster (*A. novae-angliae*), found in southern and western Minnesota.

Why do asters bloom in the fall?
One can also ask, why don't other plants bloom in the fall? Days are short and temperatures are low—disadvantages for plants to bloom. On the other hand, with most other plants waning there is less competition for water, nutrients and pollinators. In fall, asters and goldenrods are the main sources of pollen and nectar for insects.

Does leaf shape relate to habitat?
Asters in shade or in woods have the largest leaves; whereas those in open, sunny areas have the smallest leaves. Asters growing in rich, lush areas have moderate-sized leaves.

What are the fruits of asters?
The fruit of an aster is an achene—a dry, one-seeded fruit that does not split open at maturity. Attached to each achene is a tuft of hairs that aid in dispersal.

Can asters be harmful?
Asters as secondary absorbers of selenium from soil can be harmful to grazing cattle. Some humans are allergic to flowers and contract contact dermatitis.

How are asters useful?
Asters are attractive as flowers in fall and make lovely additions to dry arrangements in winter.

WWW Sites of Interest to Botanists and Ecologists

Botanists

Arnold Arboretum
gopher://huh.harvard.edu/11/collections_info/aa

Biodiversity and Biological Collections
http://muse.bio.cornell.edu/taxonomy/botany.html

A Biologist's Guide to Internet Resources by Una R. Smith 1993
gopher://sunsite.unc.edu/1m/../.pub/academic/biology/ecology+evolution/bioguide/bioguide.item

BIOSCI/bionet Electronic Newsgroup for Biology
http://www.bio.net/

Detailed Family Descriptions
http://florawww.eeb.uconn.edu/FAM_DESC_fdlist.htm

Flora of North America
http://atg1.wustl.edu/FNA/

Gray Card Index
gopher://huh.harvard.edu:70/11/project_information/authority/botany/gray_cards

International Organization for Plant Information
http://life.anu.edu.au/biodiversity/iopi/iopi.html

Lythraceae, The Loosestrifes
http://simn.kent.edu/Biology/SGraham.html

National Biological Servce (NBS)
http://www.its.nbs.gov/nbs/

Smithsonian Natural History, Department of Botany
http://nmnhwww.si.edu/departments/botany.html

University of Wisconsin, Botany Gopher
gopher://gopher.adp.wisc.edu:3000/7?botany

These two lists were selected from the list prepared by Anthony R. Brach and published in the *Flora of North America Newsletter*, volume 9, number 2, April-June 1995. A more complete list appears in that issue. Anthony Brach is at the Missouri Botanical Garden and the Harvard University Herbaria. His E-mail is brach@oeb.harvard.edu

Ecologists

Biodiversity and Biological Collections
http://muse.bio.cornell.edu/

Biodiversity, Ecology, and the Environment
http://golgi.harvard.edu/biopages/biodiversity.html

Biodiversity & Ecosystems Network (BENE)
http://straylight.tamu.edu/bene/bene.html

Boyce Thompson Institute for Plant Research
http://birch.cit.cornell.edu/

Congressional Record
http://thomas.loc.gov/

Conservation Ecology
http://journal.biology.carleton.ca/Journal/Overview.html

Current Weather Maps/Movies
http://rs560.cl.msu.edu/weather/

Ecology and Organismal Biology Resources, Harvard University
http://www.digitas.org:80/harvard/

Environmental Education Network
http://envirolink/org/enviroed/

Environmental Sites on Internet
http://www.lib.kth.se/lg.html

Environmental Studies Programs Home Page
http://www.brown.edu/Departments/Environmental_Studies/

Field Museum of Natural History
http://www.bvis.uic.edu/museum/

National Wetlands Inventory US Fish & Wildlife Service Ecology Section
http://www.nwi.fws.gov/Ecology.html

UCI's Electronic Journal of Ecology & Evolutionary Biology
http://www-ee.bio.uci.edu/eebio/node2.html

US Geological Survey-Data Available Online:
http://www.usgs.gov/data/index.html

US Long-Term Ecological Research Network (LTER)
http://lternet.edu/

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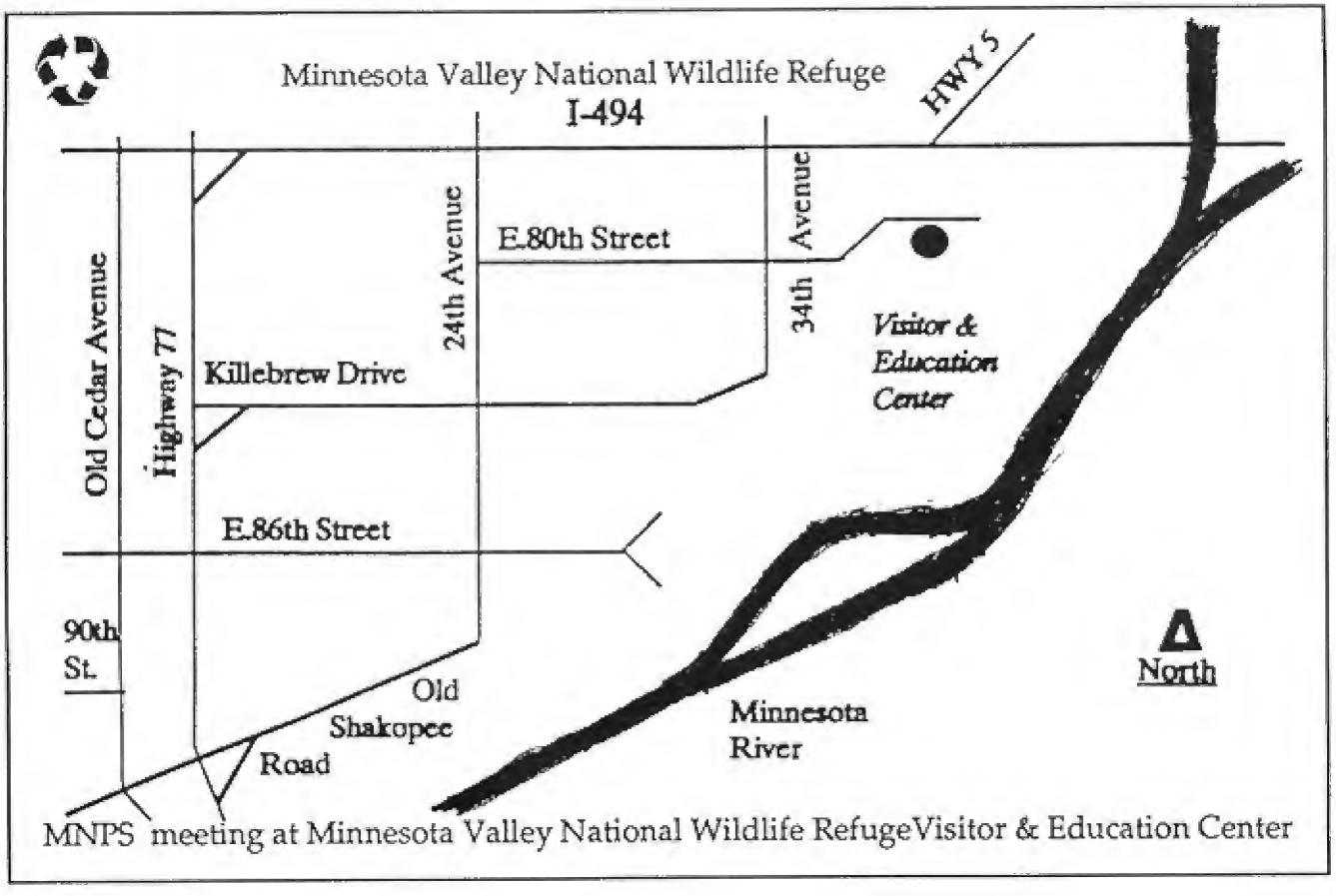

Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 15, Number 3 **Spring 1996**

Upcoming Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600 612-335-2323

6:00 PM—Board Meeting, Room B
6:30-7 PM—Socializing, Room A
7-8 PM—Regular Meeting, Auditorium
8-9 PM—Refreshments, Room A
9 PM— Doors close sharply at 9 PM

April 4—David Augustine, *Effect of Deer Browse in the Big Woods;*
Plant of the Month: Bill Capman, *Silphium*
April 17–Garden Committee 6:30 PM (see p 2)
May 2—Plant Sale and Slide Show
May 11—MNPS Symposium (see p. 4)
Spring Field Trips (see page 3 for dates)
Deadline for Summer Issue is June 15, 1996.

NEW BOARD MEMBERS ELECTED

At the MNPS meeting on March 7, 1996, three new members were elected to the Board, to take office in the fall. They are Dave Crawford, Lisa Mueller, and Gary Perrault. Going off the Board are Arden Aanestad, Nancy Albrecht, and Esther McLaughlin. We congratulate the new members and thank the outgoing members for their excellent service to MNPS!

To pool rides to the **Minnesota Valley National Wildlife Refuge**, please call—well in advance— Grace Gray who will coordinate pooling

Minnesota's Native Mayapple: the Plant Alkaloid Answer to Cancer

Elizabeth M. Frieders

Humans used plants for medicinal purposes long before recorded history. We know this from observation only: ancient cave paintings of shamans holding plants, and a 60,000 year old Neanderthal man buried with some medicinal plants. Dating to the 16th century BCE, the Egyptian Ebers Papyrus refers to 700 drugs and is thought to be one of the earliest medical texts. Many of the earliest Chinese, Hebrew, Sanskrit and Greek documents were treatises on herbal plants. In the past, whole plants, plant parts, or raw plant extracts were used in remedies. But in the 1800s, chemists began to characterize the active compounds in medicinal plants and found that they usually belong to one of three chemical groups: glycosides, oils and alkaloids.

Alkaloids are a diverse group of natural plant compounds containing carbon, nitrogen, hydrogen, and sometimes oxygen, in a ring structure. More than 3000 alkaloids have been isolated from nearly 4000 plant species. Most of the plants that produce alkaloids are herbaceous dicots; few gymnosperms or monocots produce them. It is thought that up to 2000 more alkaloids remain undetected in the plant world. Plants synthesize alkaloids through a complicated series of metabolic pathways that starts with photosynthesis. In some plants, alkaloids are systemic, while in other plants, alkaloids are sequestered in specific organs or tissues. Little is known about the role that alkaloids play in plants, but some proposed functions include: 1) growth regulation; 2) pH balance in the plant; 3) protection against herbivory, parasitism or infection; 4) a means of nitrogen storage in the plant; 5) substrates for plant-derived mimics of animal or insect pheromones (for example, pollinator attraction); or 6) waste products that have no function. It is possible that alkaloids have multiple functions in plants, many of which we have yet to understand.

Humans have found numerous uses for plant alkaloids, from medicinal (purgatives, pain relievers, tranquilizers, stimulants, muscle paralyzers) to agricultural (pesticides and herbicides), to romantic (aphrodisiacs), and of course, to narcotic. Some common examples of plant alkaloids include caffeine, cocaine, nicotine, ephedrine, strychnine, morphine, codeine, quinine, and atropine

*(continued on page 6 **Mayapple**)*

MNPS Adopted Garden Group at MVNWR Center

Classroom Garden adopted.—On Monday, March 11, 1996, with rather short notice, a small group of MNPS members and staff from the Minnesota Valley National Wildlife Refuge (MVNWR) met to begin planning the two gardens that MNPS is adopting on the MVNWR grounds. We have agreed to adopt the Classroom Garden, which lends itself to woodland plantings, and the Prairie ID Garden just outside the main entrance to the Visitor Center. The woodland garden will require more evaluation than the prairie garden throughout the coming growing season In addition, most people who signed up as interested in working on the gardens listed both gardens as areas of interest. Since it looks like the tasks will be spread out over the next 2 years, we decided to organize ourselves as one "garden group" instead of splitting up into a prairie group and a woodland group.

The next planning meeting of the garden group is scheduled for Wednesday, April 17, at 6:30 PM. Come to the door near the classrooms. We will be meeting with Mike Marxen, Fish and Wildlife Service Landscape Architect, and with other Refuge staff. All MNPS members interested in the garden projects are welcome. *–Char A. Bezanson*

Design.—Important design components used by the design team include:

- Insect and animal habitats
- A *Through the Seasons* approach for visual interest, blooming cycles, and, visitor and student use.
- Site specific microclimates, moisture and drainage requirements, soil type and modifications, solar aspects
- Underground wiring (electric or cable)
- Commitment to maintaining quality

Areas considered.—Area 1–ID Garden. Existing plants include mostly native grasses, and volunteer trees and forbs.The design team will consider woodland edge plants and prairie grasses.

Area 2–Classroom Garden. Existing plants are ferns, a few forbs, and mostly unknown plants. A woodland wild flower aspect will be created.

Assessment is needed. Volunteers are needed for planning, design, plant ID, plant salvage, soil sampling, plant donation, planting, and maintenance.

Schedule

Spring 1996: Plant ID and salvage, soil testing, design.

Summer 1996: Plant ID and salvage, removal of unwanted species, soil amendment, composting.

Fall 1996: Acquire and install plants, weed removal, modify design.

Spring 1997: Plant additional plants.

Summer 1997: Watch for invasive plants, remove or relocate plants if needed.

These plans are subject to change, depending on circumstances. *–Gary Perrault*

MNPS Financial Report for 1995

Assets on hand 1 January 1995	$ 6141.12
Income during 1995	5959.53
Total cash	12100.65
Expenses during 1995	5965.51
Assets on hand 31 December	6166.83
Checking account balance 31 Dec 95	1892.64
Income	
Membership	$ 3713.00
Donations	211.00
Symposium	966.00
Wildflower booklets	9.00
Plant sale	492.50
Hennepin Parks	512.00
State Fair	25.00
Bank interest	31.03
Total income	**$ 5959.53**
Expenses	
Printing & copies	$ 1955.04
Postage	1058.52
Speakers & writers	650.00
Symposium	233.63
Refreshments	213.26
Supplies	64.80
Paid services	579.35
Advertising	133.14
State Fair expense	10.00
Phone calls	19.09
Arboretum donation	200.00
Hennepin Parks	488.48
MN Valley Int. Association	300.00
Memorial (May Wright)	60.20
Total expenses	**$ 5965.51**
CD TCF due April 1996	$1129.14
CD TCF due July 1996	$2500.00
CD TCF due December 1996	$645.05

—Ruth Phipps, Treasurer

The Minnesota Native Plant Society

Minnesota Plant Press
Thor Kommedahl, editor

Membership dues are $10 per year for regular members and includes subscription to the newsletter; dues for students and seniors are $8, for family $12, for institutions $20, and donors $25. Make checks payable to: Minnesota Native Plant Society, and sent to: Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

MNPS Board of Directors

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Nancy Albrecht,

Gerry Drewry,

Thor Kommedahl,

Esther McLaughlin,

Val O'Malley,

Roy Robison,

The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

Spring Field Trips 1996

Early Spring Trips

April 20 and **21**, Sibley State Park, early wildflowers, 3-4 PM. Vehicle needed; contact the park at (612) 354-2055.

April 20, 24, and **May 1**, Nerstrand Big Woods State Park, warblers and wildflowers; 7:30-9:45 AM; register by calling *The Nature Conservancy* at (612) 331-0767.

April 28, Nerstrand Big Woods State Park, Picnic shelter, spring flowers; 1-3 PM, Char Bezanson, leader;

May 4

•Frontenac State Park, spring woodland wildflower walk, 10 AM; Preregistration required with small fee. Contact Lake City Community Education Department at (612) 345-2850, or Frontenac State Park at (612) 345-3401.

•Whitewater State Park, morel mushrooms and wildflowers; 1-3 PM; bring transportation to drive to activity site; for details, contact the park at (507) 932-3007.

May 4 and **5,** Sibley State Park, woodland wildflowers, 2:30-4 PM; for details, call the park at (612) 354-2055

May 11

• Sakatah Lake State Park, 10 AM, Blooming Edges Wildflower Walk; no reservations needed; for details, contact the park at (507) 362-4438.

•Wild River State Park, spring wildflowers in the St. Croix valley, 1-3 PM; Dave Crawford, leader; meet at picnic shelter; a bag lunch is suggested; for details, contact the park at (612) 583-2925.

May 18, St. Croix State Park, wildflower watercolors, 10-11 AM; meet at visitor center to car pool to Sand Creek; for details, contact park at (612) 384-6615, or 384-6591.

May 19, Rice Lake State Park, wildflower walk, 1 PM; no reservations; for details, contact park at (507) 455-5871.

May 25, Whitewater State Park, yellow lady's-slipper walk, 1-3 PM; bring transportation to drive from visitor center to the trail head; for details, contact park at (507) 932-3007.

June 1, Wild River State Park, exploration of a managed oak savanna and early season prairie wildflowers, 1-3 PM; Dave Crawford, leader; meet at interpretive center—an alternative indoor walk will replace walk if weather is inclement; wear appropriate clothing and tick repellent on shoes, socks, and cuffs; for details, contact park at (612) 583-2925.

June 15, Nerstrand Big Woods State Park, Outside In Tour, 10-11:30 AM. The future of Nerstrand Big Woods State Park relies on land use in the neighborhood. Join the tour to see the park from the "outside in". See the glacial outwash valley of Prairie Creek, restoration work to "close the canopy", fragmentation of habitats, and the edge effects in the Big Woods. Preregister at

Late spring and early summer

June 22, River Terrace Prairie Scientific and Natural Area, Cannon Falls, 7 AM. Ellen Fuge, leader. Bike the Cannon Trail from Cannon Falls to Red Wing with a stop halfway at trail-side rest area for a tour of the River Terrace Prairie SNA. This is a 25 mile, downriver trip on paved abandoned railroad grade along the river. The SNA protects the only gravel prairie in Goodhue County, with one of the largest populations of kittentails in Minnesota. Expect a short climb. Have breakfast at a local cafe, rides start at 8 AM. Lunch in Red Wing. Either pedal back or shuttle. Group size is limited to 12 people. Bring food and beverage; maps provided. Contact Ellen at

June 29, Prairie Moon Nursery Tour, 1-5 PM (Winona Area). Join a tour at this nursery on native transplant and seed production gardens, diverse restoration plantings, and landscape projects using native species. There will be an optional hike (moderately difficult) to the top of a nearby goat prairie. For details, directions, and reservations, contact the nursery at (507) 452-1362.

—prepared by Nancy Albrecht

For all trips to state parks, a vehicle permit will be required. Bring handbooks, lenses, camera, and other outdoor equipment to facilitate study and enjoyment of the trip.—NA

Wetlands in Your Backyard

To celebrate National Wetlands Month, explore and learn about wetlands with landscape architect Sherri Buss and aquatic plant specialist Mike Halverson at Maplewood Nature Center, Tuesday, May 7, 7-9 PM. Topics will include:

•Characteristics of a healthy wetland habitat

•Benefits of wetlands for wildlife, water quality, and aesthetics

•Resources available to enhance neighborhood wetlands through planting and other habitat improvements

•Identification of common wetland plants

To register for this *free* program, please contact Janet Grew Hayman, Naturalist, at the Maplewood Nature Center, (612) 738-9383, or 436-7621.

Minnesota Botany—An International Exhibition of Photography

Exhibitions will be held at the Minnesota Native Plant Society meeting, Thursday, May 2, 1996, at 7 PM and at the Minnesota Nature Photography Club meeting on Thursday, May 16, 1996, at 6:30 PM. Both meetings will be held at the Minnesota Valley National Wildlife Refuge Center.

The subject matter includes flowering plants, fungi, lichens, mosses, ferns, habitats, and fossil plants. Entry forms for submitting slides for judging can be obtained from Marilyn or Warren Gladitsch or send slides, entry fee, name and address, and slide titles to Minnesota Botany, 2110 Watson Avenue, St. Paul, MN 55116.

Judging will take place on Saturday, April 20, at St. George's Episcopal Church, 5224 Minnetonka Blvd., St. Louis Park, from 9 AM to mid-afternoon. All are invited to attend the judging.

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Call Don Knutson at

E-mail in the Directory

Marcie O'Connor keeps and updates the mailing list for MNPS. In the Directory for fall 1996, E-mail addresses can be included. Please send your E-mail address to Marcie at: marcie@haven.com if you want your E-mail address to be included in the Directory.

The Spring Symposium on Deciduous Forests is May 11

The annual MNPS Spring Symposium wll be held Saturday, May 11, 1996, at the Minnesota Valley National Wildlife Refuge (MVNWR). It will focus on Minnesota's deciduous forest ecosystems and plants. An interesting program of speakers and gardening discussions is planned—look for a brochure in your mail sometime in early April. Two MVNWR gardens which the MNPS has "adopted" will be a featured aspect of this year's symposium, as several members with gardening expertise share their knowledge of cultivating woodland (and other) native plants in afternoon workshops. Plan to bring your lunch, learn about our broadleaf forests, discuss gardening, and explore the refuge grounds afterwards.—*Esther G. McLaughlin*

DNR seeks volunteers

The Scientific and Natural Areas Program of the Minnesota Department of Natural Resources (DNR) seeks volunteers to help preserve some of Minnesota's rare natural features. Undisturbed remnants of the state's original prairies, peatlands, forests, wetlands, geologic features, and rare plants and animals are targets of this program.

Workdays are held at four sites—St. Croix savanna, Lost Valley Prairie, Wolfield Woods, and Falls Creeks—from April through October. All workdays are on Saturday, from 10 AM to 2 PM. Activities include firebreak maintenance, planting of seedlings, removing exotic weeds, and collecting seed for restoration projects.

If interested, call the volunteer office at DNR: (612) 297-1449. Detailed information about the sites, volunteer information, workday schedules and an application form will be provided.

—Judy Lively, Volunteer Coordinator, DNR Scientific and Natural Areas Program, 500 Lafayette Road, St. Paul, MN 55155.

Reed Canary Grass

Charles E. Umbanhowar Jr.

Reed canary grass (*Phalaris arundinacea* L.) is an all too common inhabitant of Minnesota wetlands and marshes, and can form dense clumps excluding all other species except for a scattered nettle or two.

Reed canary grass is native to temperate regions of North America, Europe, and Asia. It is a cool season grass 3 to 6 feet tall. The inflorescence is about 3 to 7 inches long and is relatively thin (0.5 to ~2 inches); the width of the inflorescence varies with the wetness of the environment. The wide (0.25-0.75 inch) blade of reed canary grass juts out at a sharp angle to a length of 3 to 16 inches, and a large membrane-like ligule (0.25 inches tall) is present where the sheath and blade meet. Large rhizomes enable rapid spread to form dense patches several yards in diameter.

Agronomists have long been interested in reed canary grass as a forage crop and have developed cultivars palatable to animals. This grass has great tolerance to grazing and regrows rapidly to produce as much as 4 to 8 tons of dry matter per acre in one year. This rapid growth rate makes it useful to stabilize banks after road construction. Reed canary grass is an effective nutrient filter and can remove large amounts of nitrate nitrogen, as reported in New Zealand.

Because of these characteristics, this species is a significant threat to shallow-water wetlands; floating mats were reported in Connecticut. It is unclear why it invades only certain wetlands, although nutrient runoff from uplands may affect the plant's ability to absorb nitrogen and other nutrients. Other agronomic factors may be involved.

Reed canary grass can be flooded out or killed with broad-spectrum herbicides (Rodeo or Pondmaster) applied annually in June. Burning and herbicides have been undertaken as a last resort; however this combination may stimulate seed germination to reduce the size of the seed bank. See references on page 9 for more information.

Factors affecting biological recovery of wetlands restorations

Susan M. Galatowitsch

Benefits of restoring wetlands

Public interest in restoring wetlands stems from a belated recognition of the benefits of wetlands in the landscape, including their importance for improving water quality, reducing flood flows, and providing wildlife habitat (2). Unfortunately, restored wetlands have not been shown to provide functions, such as maintenance of diversity, improvement of water quality, and habitat for wildlife, normally associated with natural wetlands (20). Revegetation of hydrophytic vegetation is essential for restored wetlands to function as natural wetlands, for example, denitrification occurs at the greatest rates when emergent plant litter is present to provide a microbial colonizing surface. Emergent vegetation such as bulrushes and cattails quickly reestablish themselves without planting and resemble plantings of natural wetlands within a few years, in many wetlands (8, 9, 17). However, the margins of restored prairie wetlands lack sedge meadow vegetation present in natural wetlands (4). Instead the periphery of restored marshes is dominated by mudflat annuals. Wetland functions of restored wetlands associated with emergent vegetation, such as nitrate reduction in surface waters, may be comparable to natural wetlands relatively rapidly, whereas, other functions may be impaired because of lack of revegetation.The lack of sedge meadow revegetation, for example, was shown to limit use of yellow throats, sedge wrens, and rails in restored prairie potholes (3). Also, lack of perennial vegetation on the edge of restored wetlands will likely increase sediment amounts and sediment-borne agricultural chemicals (phosphorus and pesticides) received by the basin.

Natural restoration

Many restored wetlands are allowed to become recolonized naturally because it is thought that natural plant dispersal and establishment will adequately revegetate them (10). Seedbanks of wetland basins drained for more than 15-20 years contain few species, mostly restricted to mudflat annuals and a few emergent perennials (19). Similarly, the seedbank compositions of restored basins—all drained for 25 to 70 years—in my study (5) were found to be depauperate and not concordant with existing vegetation on the sites. Submersed aquatic species such as *Potamogeton* species, for example, do not tolerate desiccation (12), and, therefore, must recolonize the restored basins from immigrant propagules. Sedge meadow and wet prairie perennials were not found in the seedbanks of natural or restored wetlands. Because these species inhabit stable environments, they may lack persistent seedbanks, unlike mudflat annuals and emergent perennials that must tolerate periodic drying and flooding (18). Assuming that seedbanks are not persistent in wet prairie and sedge meadow species, plants must rely on dispersal for recolonization.

Limitations to natural recolonization

Others also have found limitations to natural recolonization. On the basis of a survey of the floristics of ponds created between 25 and 250 years earlier, Godwin (6) concluded that land barriers slow the dispersal of wetland vegetation considerably. Similarly, land barriers to dispersal were implicated in patterns of colonization in Dutch polders: the number of species decreased with distance from propagule source (7, 14). Dispersive characteristcs of species affected their rates of colonization. Wind-dispersed species such as *Senecio congestus* and *Typha latifolia* colonized new polders in the Netherlands more rapidly than water-dispersed species such as *Scirpus maritimus*. Reinartz and Warne (16) also found that distance to the nearest seed source had a particularly strong effect on the number of native wetland species present in restored wetlands in Wisconsin. Moller and Rordam (11) reported ten fewer species in ponds within an area with an average interbasin distance of 1040 meters than in another with an average distance of 435 meters.

Dispersal rates

Nearly all studies, including those just described, identifying land barriers to dispersal as a limitation to wetland colonization do so by inference from vegetation patterns and not by direct measurements of dispersal. Archibold and Thompson (1) attempted to measure dispersal rates in a limestone quarry in New South Wales, Australia, by putting out trays of sterilized soil for 6 months. No native species were detected in their samples, causing them to recommend deliberate planting. Long-term data on dispersal rates in fragmented landscapes is also lacking for wetland systems. However, studies on a woodland plant, dog's-mercury (*Mercuralis perennis*) suggest that land barriers can be impervious. Although secondary forests and hedgerows occur throughout the range of *M. perennis*, only 35 populations have colonized wetlands from 119 ancient forest populations within the last 300 years (15). Half of the new populations are likely to have spread vegetatively from nearby source woodlands. So, a new population becomes dispersed from source areas by seed to establish populations less than once every 15 years, on the average.

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1 Archibold OW, Thompson S. 1984. Natural seed input as a factor in the reclamation of limestone quarry wastes at

(continued page 9 **Wetlands***)*

(continued from page 1)

(in fact, most compounds ending with -ine). Many over-the-counter pain relievers and allergy or cold tablets contain at least one plant. I found it interesting to locate alkaloids on the ingredient labels of my household pharmacy. What plant products are hiding in your own medicine chest?

Modern medicine has put plant alkaloids to an extremely wide range of uses. And not surprisingly, remedies to one of the most feared diseases of the modern era, cancer, are being sought in the plant world as well. In the 1940s, two plant alkaloids with cancer-fighting abilities were found by accident in the rosy periwinkle. Since then, scientists have actively sought plants that have been used by folk healers or shamans. Six of the 66 anticancer drugs approved in the United States are derived from plants: one from the Pacific yew, three from the rosy periwinkle, and two from Minnesota's native plant, the mayapple.

The mayapple (*Podophyllum peltatum*, Berberidaceae) is an herbaceous plant found in moist woods to clearings, on well-drained soil. It ranges from Quebec to Minnesota, Texas, and Florida. In Minnesota, the mayapple is restricted to the southeast corner of the state. As its name suggests, the mayapple flowers in early spring and begins to set fruit in May. The small edible fruits are lemon-shaped and are yellowish in color (so why mayapple and not maylemon, I ask?).

References to the mayapple and its medicinal compounds have been in the scientific literature for more than 250 years. This medicinal knowledge of the mayapple was acquired from various Native American groups, who used the plant for centuries as both a medicine and a poison. In the mayapple, the alkaloids, or podophyllotoxins, are produced in the leaves and stems and stored in abundance in the rhizome. Native Americans gathered the rhizome in the fall, then dried and crushed it to a powder. In 1835, a medicinal resin called podophyllin was produced by extracting the alkaloids in the rhizome with alcohol. Unfortunately, not long after the widespread use of podophyllin, numerous problems were associated with its consumption: severe gastrointestinal interactions, mild cardiovascular effects, and liver and kidney damage. Podophyllin resin fell into the "If it don't kill ya, it'll cure ya" drug category! The active ingredients of podophyllin resin are podophyllotoxins. Podophyllotoxins are called aliphatic alkaloids—functionally and structurally similar to alkaloids, with multiple rings, but lacking nitrogen (hence the lack of an -ine name ending). Many plant-derived anticancer agents, such as the podophyllotoxins, the vinca alkaloids, colchicine (an anticancer alkaloid from the autumn crocus, still in the testing stage), and taxol (the anticancer compound from Pacific yew), affect cell division in numerous ways. Therefore, they are good targets for cancerous cells, which have lost the ability to regulate the frequency of cell division, and undergo nuclear division frequently. Unfortunately, the side effects of podophyllotoxins are more intense than those of the podophyllin resin, and they have not been approved as anticancer drugs in the United States.

Since the late 1800s, numerous synthetic and semisynthetic variations of the podophyllotoxins, called epipodophyllotoxins (the words keep getting longer,don't they!), have been created and tested for anticancer effectiveness, with the hopes of finding drugs less poisonous to the patient. The most active, and yet somewhat safe, of these are etoposide (or VP 16-213) and teniposide (or VM-26); both are now approved drugs in the United States. These epipodophyllotoxins show a highly significant activity against non-Hodgkin's lymphomas, leukemias, small cell lung cancer, and germ cell malignancies, such as testicular cancer. Teniposide also shows definite activity against brain tumors and childhood leukemias. Epipodophyllotoxins also affect cell division, but in a manner unlike that of other plant-derived alkaloids.

Medical researchers have begun a race against time to isolate and purify plant-derived alkaloids from plants used in folk remedies—before the plants become extinct. But in doing so, they have found that some isolated compounds are not as effective as the plant extract, or sometimes, as in the case of the podophyllotoxins, are too toxic to use. It is thought that the natural alkaloid-containing plant extracts may be more effective and less harmful to humans because they contain impurities that may lessen the toxicity of the alkaloids and render them more effective at treating cancer. With further studies, it is possible that the podophyllotoxins, or the raw podophyllin resin extract may become usable anticancer drugs in the future. (References are listed on page 9, col. 1)

Elizabeth M. Frieders is a doctoral candidate in the Department of Plant Biology, University of Minnesota, St. Paul.

Cooper's milkvetch (*Astragalus neglectus*) is a native Midwestern legume in Minnesota's prairie-forest transition zone, reports Nancy Sather, botanist in the Minnesota Natural Heritage and Nongame Research Program. More than 100 locations have been found in a band from central Marshall County to northern Becker County, usually in disturbed areas. The DNR is preparing a status report on this species for the winter of 1996-1997, and seeks information on locations south and east of the known areas. Please report sightings and locations to Nancy Sather, DNR Box 7, 500 Lafayette Road, St. Paul, MN 55155-4007; (612) 297-4963; E-mail:nancy.sather@dnr.state.mn.us

10,000 Years and 50 Miles A Minnesota Odyssey

John R. Tester

A small increase in the average annual temperature in the northern hemisphere, 3 to 6° F, resulted in the end of glaciation in North America. A similar change can be observed in a 50-mile east-west transect in northwestern Minnesota today. This transect extends westward from Itasca State Park into Mahnomen County. Precipitation change in this transect is believed to be due to the influence of the Alexandria Glacial Moraine on local weather patterns.

To a large extent, climate determines the vegetation that exists in a given location. Climate and vegetation both influence the distribution and abundance of animals.

Ecosystems in Minnesota have changed markedly during the 10,000 years since glaciation, as shown by pollen deposited in wetlands and lakes. The first trees to become established following the retreat of the continental glaciers were probably spruce, fir, and tamarack. These conifers were adapted to a cool, wet climate. This climate changed, and a warm, dry period lasting several thousand years occurred in central North America about 4,000 to 8,000 years ago. Savanna and prairie ecosystems replaced the conifer forests and covered northern Minnesota as far east as Duluth. About 2,000 years ago, the climate again changed, becoming more cool and wet. Northern coniferous and deciduous forests, such as are present today, replaced the savannas and prairies in most of northern Minnesota.

Some models of global climate change predict that the increase in average annual temperature in central North America by 2050 may be far greater than 3 to 6° F. Such an increase would likely cause a reduction in soil moisture. These changes in the physical environment would have marked impacts on the distribution and abundance of plants and animals.

This is a summary of a talk given by John Tester, at the February 1, 1996, meeting of the Minnesota Native Plant Society. Dr. Tester is in the Department of Ecology, Evolution and Behavior, University of Minnesota, St. Paul.

Greening the Great River Park: Community Restoration in St. Paul's Mississippi River Valley

Andy Sudbrock

For much of this century the city of St. Paul has taken it for granted its most significant historic and natural resource, the

Mississippi River. With current efforts to revive the downtown riverfront district, St. Paul citizens are reconnecting with the river and are working to restore extirpated native plant communities to the river valley and surrounding uplands. Hundreds of volunteers, including planters, designers, ecologists, and public and private landowners, are cooperating to restore floodplain forest, northern deciduous forest, oak savanna, and native prairie within 2,000 acres of urban matrix. The Great River Park's planting boundaries extend from the High Bridge near Lilydale Regional Park downriver to the Holman Field Airport, and include the entire river valley from bluff to bluff.

Greening project volunteers are planting native trees, shrubs, and prairies on privately owned office and industrial land as well as on publicly owned parks and right-of-ways. Ninety-one of 93 private landowners have signed agreements to work with us and allow planting to take place on their property. In 1995, 750 volunteers planted 2,848 native trees and shrubs in the Great River Park. Our goal is to restore a healthy and diverse urban ecosystem by planting 25,000 trees and shrubs and restoring more than 160 acres of prairie.

The 1996 spring planting will take place on April 27. In addition to volunteer planters, we need knowledgeable people to supervise planting teams. Our Planting Team Leader training seminar will be held April 6. Members of the Minnesota Native Plant Society are encouraged to share their expertise on native plants and landscapes by joining us as Planting Team Leaders. For details and to register as a volunteer planter or Team Leader, call Kathy Dougherty

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Andy Sudbrock is an ecological restoration consultant to Greening the Great River Park and owner of Applied Ecology Native Landscape Restoration

Biology of Tussock Sedge

Charles E. Umbanhowar Jr.

Tussock sedge (*Carex stricta* Lam.) is a perennial, monoecious, anemophilous native sedge and is the dominant species in many shallow-water wetlands from Minnesota to Virginia, and Texas to Canada. That first sentence is a mouthful so let's take it a little bit at a time. Tussock means clump or tuft and refers to the growth habit of the plant. Tussocks may grow 1-2 feet tall, 1-2 feet in diameter and are topped with dense growths of long (1-2 feet), thin (< 0.25 inch wide), dark-green leaves that are w-shaped in cross section. You may have tripped over some of these tussocks some time when tromping in a wetland! If you look closely at the leaves, you will see that they originate in groups of 2-3 from individual tillers on the surface of the tussock. These tillers are probably genetically identical and belong to the same plant. New tillers are produced each year. They accumulate as they die and windborne soil may also be trapped between them. As new tillers are produced they grow on top of the remains of the old tillers and trapped soil and so increase the height of the tussock.

Anemophilous means that the flowers are wind-pollinated and monoecious means that plants produce separate male and female flowers. These flowers are very small (1-5 mm long), brownish and lack sepals and petals. The pistil (carpel) of the female flowers is surrounded by a little sack termed a perigynium. Male and female flowers are present within each inflorescence and arranged on 4-5 lax "branches" termed inflorescence units. The top "branch" always bears male flowers (100-200), the lowest female flowers (200-300) and the intermediates some combination of male and female flowers. Where male and female flowers occur on the same branch, the males are always closer to the branch tip, paralleling the distribution for the plant as a whole.

We don't know how the plant "decides" how many male and female flowers to produce. In many species, larger (or taller) plants produce more female flowers and there is evidence to suggest that female flowers and fruits that follow pollination and fertilization are more "expensive" than male flowers. On average, tussock sedges produce more female flowers than male flowers but there is no obvious relation between the size of the tussock and the proportion of male to female flowers.

Ferns and other species grow on *Carex stricta* tussocks; duckweeds and other plants grow in small pools between the separate tussocks. *Carex stricta* and many other plant species that grow with it do not survive in deep-water wetlands where one frequently finds cattails. While some restorationists are propagating *Carex stricta*, it will take probably many years to recreate the large tussocks present in many shallow wetlands, and it will take even more time and large amounts of money to add the species that grow on tussocks. This makes protection of shallow-water wetlands even more important, and it is why we should not assume that all wetlands or wetland plants are created equal.

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Endangered species list

Lori Biederman is creating a list of references to plants on the endangered species list. If you have any sources, especially unique ones, please contact Lori by E-mail: bied0011@gold.tc.umn.edu, or call . A copy of the list, or a portion of it, can be requested from *Lori Beiderman.*

Plant Lore

What is columbine?
Columbine is a perennial in the buttercup family whose Latin name is *Aquilegia canadensis.*

How did it get these names?
Aquilegia is thought by some botanists to mean "eagle", referring to the flower spurs that resemble the eagle's talons. The common name columbine comes from *columba*, which means "dove", referring to the five petals (spurs) that resemble five doves drinking at a dish.

Why are columbines popular spring flowers?
This Minnesota native plant grows wild in nearly all counties in the state and also grows well in gardens. Even after flowering, the fruits are attractive in design and beauty. Their abundant, bright red and yellow flowers are attractive to early arriving humming birds.

Why are humming birds attracted to columbines?
The flower is suspended upside down with male and female parts hanging out. Each of the five petals is shaped like a cone and is called a spur, the tips of which hold nectar. The red-colored petals attract the birds; in fact, columbines probably evolved to be pollinated by humming birds.

Are insects attracted to columbines?
Yes, bees visit flowers but they can't reach the nectar at the ends of the long tubes, so they poke a hole into the spur and sip the nectar. Also, leaf miners bore tunnels in leaves, especially in new leaves produced late in the season.

Are there any medicinal uses?
Native Americans crush seeds and use the paste for headaches, as a perfume, as an astringent, as a diuretic and to relieve pain. Seeds have been rubbed into the hair to control lice. Roots have been chewed or made into a tea for diarrhea and for stomach troubles.

Minnesota's Native Mayapple
(continued from page 6)

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Reed Canary Grass (see page 4)

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This is a summary of a talk to the MNPS by Dr. S.M. Galatowitsch, University of Minnesota, Departments of Horticultural Science and Landscape Ecology, St. Paul, on March 7, 1996.

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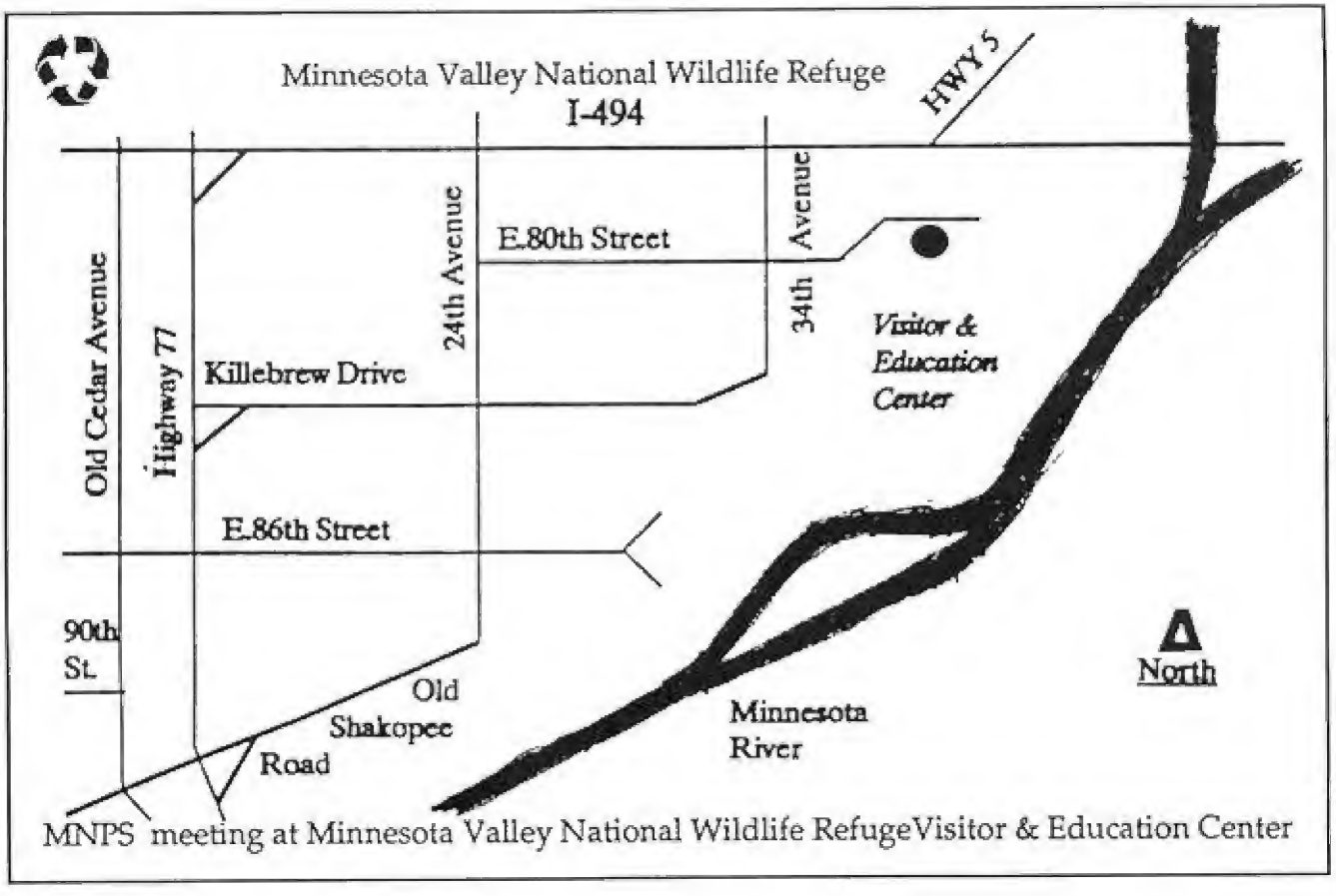

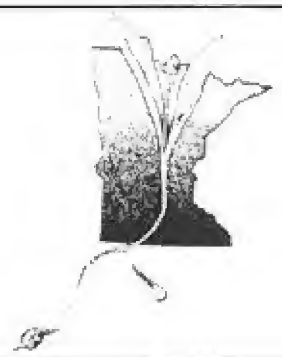

Minnesota Plant Press

The Minnesota Native Plant Society
Newsletter

Volume 15, Number 4 **Summer 1996**

Upcoming Monthly Meetings

Minnesota Valley National Wildlife Refuge
Visitor Center, 3815 East 80th Street
Bloomington, MN 55425-1600 612-335-2323

6:30-7:15 PM—Socializing, Room A
7:15-8 PM—Regular Meeting, Auditorium
8-9 PM—Refreshments, Room A
9 PM— Doors close sharply at 9 PM

1996

September 5—Board Meeting, 6:30 to 8:30 PM at MVWR Visitor Center
October 3— Program Meeting
November 7— Program meeting and Seed Exchange
December 5—Program meeting.
December 7—Board Meeting, 10-12 AM

1997

February 6—Program meeting
March 1—Board Meeting, 10-12 AM.
March 6—Program Meeting
April 3—Program Meeting
May 1—Program Meeting
June 3—Program Meeting and Plant Sale
June 22—Board Meeting, 12-4 PM

Field Trips, see page 4.

Deadline for Fall Issue is August 15, 1996.

•To pool rides to the **Minnesota Valley National Wildlife Refuge**, please call—well in advance—Grace Gray who will coordinate pooling

New Decisions made at the MNPS Board Retreat on June 23

The MNPS Board of Directors met for four hours on Sunday, June 23. The annual Board Retreat is an opportunity for the Board, including both outgoing board members and new board members, to get together for an extended period of planning, and to elect officers. This year, major agenda items included the following:

Board Election. Officer responsibilities were discussed. We would like to move to a system where the Vice President moves into the presidency the following year, and is the chair of the Nominations Committee during the vice-presidential year. In the recent past, the Vice President has been the Program Chair; this responsibility was uncoupled from the office. Char Bezanson was reelected President; Charles Umbanhowar was reelected Vice President. Pat Ryan was elected Treasurer, and Chris Drassal was reelected Secretary.

Program. The board discussed ways to structure meetings to make it easier for members to connect with each other, and to make it easier for new members to meet others. While we will retain our emphasis on a strong program of speakers, we will attempt to provide structured opportunities to meet others in smaller groups for part of some meetings.

Membership Involvement. The board has been concerned for some time that much of the work of the Society is concentrated in a few key people, and board members brainstormed ways to improve the situation. We are a diverse group with a wide variety of backgrounds, including academics, agency professionals, gardeners, and other native plant enthusiasts. While many of us know each other, the structure of our meetings doesn't always make it easy for people to participate and interact with one another.The "lecture" nature of the program, while meeting many needs, is essentially passive.

*(continued on page 7, **New Decisions...**)*

MNPS officers, board members, committee personnel, and function coordinators—1995-96 and 1996-97

Board Directors	1995-96	1996-97
1	Nancy Albrecht (93-96)	Roy Robison (94-97)
2	Arden Aanestad (93-96)	Char Bezanson (94-97)
3	Esther McLaughlin (93-96	Val O'Malley (94-97)
4	Roy Robison (94-97)	Gerry Drewry (95-98)
5	Char Bezanson (94-97)	Thor Kommedahl (95-98)
6	Val O'Malley (94-97)	Charles Umbanhowar (95-98)
7	Gerry Drewry (95-98)	Gary Perrault (96-99)
8	Thor Kommedahl (95-98)	Deb Anderson (96-99)
9	Charles Umbanhowar (95-98)	Dave Crawford (96-99)
Officers		
President	Char Bezanson	Char Bezanson
Vice President	Charles Umbanhowar	Charles Umbanhowar
Secretary	Chris Drassal	Chris Drassal
Treasurer	Ruth Phipps	Pat Ryan
Program Committee		
Chair	Charles Umbanhowar	Dave Crawford
Board Liaison	Charles Umbanhowar	Charles Umbanhowar
Monthly Program	Charles Umbanhowar	Gary Perrault
Symposium	Esther McLaughlin/Don Knutson	to be filled
Field Trips	Nancy Albrecht	Nancy Albrecht
Hospitality	John & Jackie Buffalow	to be filled
Audio-Visual	Charles Umbanhowar	Gary Perrault
Facility	Char Bezanson	Char Bezanson
Security	Don Knutson	Don Knutson
Seed Exchange	Ry Robison/Char Menzel	Roy Robison
Plant Sale	Gerry Drewry	Gerry Drewry
Postcard Notification	Esther McLaughlin	to be filled
Publication Committee		
Chair	Roy Robison	Roy Robison
Board Liaison	Roy Robison/T. Kommedahl	Roy Robison/T. Kommedahl
Printing/Mailing	Roy Robison	Roy Robison
MN Plant Press Editor	Thor Kommedahl	Thor Kommedahl
Membership-Outreach		
Chair	Diane Hilscher*	to be filled
Board Liaison	Roy Robison	Roy Robison
Roster	Marcie O'Connor	Marcie O'Connor
New members	Diane Hilscher	Diane Hilscher
Brochures & Stationery	Don Knutson	Don Knutson
Display Board	Don Knutson	Don Knutson
Mail Pickup/Distribution	Rae Montgomery	Bettina Darveaux
Car Pooling	Grace Gray	Grace Gray
Conservation Committee		
Chair	Vacant	to be filled
Board Liaison	Char Bezanson	Char Bezanson
Issues	Vacant	t o be filled
Adopted Gardens	Char Bezanson*	Chris Armstrong

*Function performed by default

The Minnesota Native Plant Society

Minnesota Plant Press
Thor Kommedahl, editor

Membership dues are $10 per year for regular members and includes subscription to the newsletter; dues for students and seniors are $8, for family $12, for institutions $20, and donors $25. Checks can be made out to: Minnesota Native Plant Society, and sent to : Minnesota Native Plant Society, 220 Biological Sciences Center, 1445 Gortner Avenue, St. Paul, MN 55108.

Four issues are published each year.

MNPS Board of Directors

President: Char Bezanson,

Vice-President: Charles Umbanhowar,

Treasurer: Pat Ryan,

Secretary: Christine Drassal,

Deb Anderson,

Dave Crawford,

Gerry Drewry,

Thor Kommedahl,

Val O'Malley,

Gary Perrault,

Roy Robison,

The Minnesota Native Plant Society is a tax-exempt 501 c3 organization as determined by the US Internal Revenue Service.

MNPS Calendar for 1996-1997

August
MPP fall issue deadline: 8/15/96

September
Board meeting: 9/5/96, 6:30-8:30 PM. MVNWR

October
General meeting and program: 10/3/96, 6:30-9 PM. MVNWR

November
General meeting, program, and seed exchange: 11/7/96, 6:30-9 PM, MVNWR
MPP deadline for winter issue: 11/15/96

December
General meeting and program, 12/5/96, 6:30-9 PM MVNWR
Board meeting 12/7/96, 10-12 AM, location TBA

January
No society meetings

February
General meeting and program, 2/6/97, 6:30-9 PM. MVNWR
MPP deadline for spring issue: 2/15/97

March
Board meeting: 3/1/97, 10-12 AM, location TBA
General meeting, program, and election: 3/6/97 6:30-9 PM. MVNWR

April
General meeting and program: 4/3/97, 6:30-9 PM, MVNWR
Symposium or alternative event: TBA

May
General meeting, program, and plant sale: 5/1/97, 6:30-9 PM. MVNWR
MPP summer issue deadline: 5/15/97

June
Board retreat: 6/22/97, 12-4 PM, Location TBA.

MNPS Display Board Use

All members are welcome to show our display board at events, museums, and schools, if an attendant is present or it is safely displayed. This 3 by 5 foot, 2-sided board holds information on the Society, native plants, and stewardship. Call Don Knutson to request it.

Minnesota Native Plant Society's *Guide to Spring Wildflower Areas*

Due to the significant efforts of members Marilyn and J.B. Andersen, Jim Schuster, and John Moriarty, the MNPS' *Guide to Twin Cities Wildflowers* has been updated, redesigned and reprinted for your use as the 1996 edition. New features include an appendix of plants listed by both common and scientific names, updated information on Twin Cities area natural areas and new illustrations courtesy of Vera Ming Wong.

The 1996 publication is now available by special order through the MNPS and is being carried by the Blufftop Bookstore (MVNWR), the DNR Giftshop, the Blue Heron Bookstore (Bell Museum), Landscape Alternatives, Prairie Restorations Inc., and the St. Olaf Bookstore for $5. If you would like to mail order a copy of the Guide, please send $5 (check or money order please) per copy to: MNPS c/o Char Bezanson, The School Nature Area Project, 1520 St. Olaf Ave., Northfield, MN 55057. Make checks payable to The Minnesota Native Plant Society.

If MNPS members would like to distribute the guide to local nature centers or bookstores, copies can be purchased by interested members ($3 wholesale) and then resold to the centers or bookstores at that price with a suggested retail price of $5. Invoices, if needed, can be obtained from Char Bezanson or me.—*Nancy Albrecht*

The May Apple (*Podophyllum peltatum*)

"May Apples should be eaten in moderation. I vividly recall an experience of my own when I was a small boy perhaps eight years old. One afternoon in August my parents went to a neighbor's [home] for a few hours leaving a brother who was three years older than I, at home with me with instructions not to get into any mischief. We went down a lane to a large open woods where thousands of May Apples were at their best. Some were as large as the eggs of a chicken. We filled our hats to overflowing, then sat under a tree near the house to enjoy them. They were delicious, and it was the first time that I could eat all the May Apples that I wanted and not have someone around to say "no". Half an hour later I was rolling on the ground with the worst colic that one could imagine. I felt certain that I was going to die but hoped to put off the fatal moment until my parents returned. An hour or two later the discomfort left me without any ill effects; but I shall never forget the agonizing experience."—*Oliver Perry Medsger,* 1966.

Summer and Fall Field Trips

Nancy Albrecht

July 27, Saturday, 9 AM to 1 PM
Residential Alternative Lawn Tour
Sponsored by *Friends of the Mississippi River*, this tour provides opportunities to view native woodland and prairie gardens; attractive shoreline plantings; plantings to attract butterflies and birds; and minimal maintenance, low input turf grass lawns. Choose a tour of Ramsey or Hennepin County. Registration required by July 12. The $10 fee includes bus tour and written materials. For registration or details, contact Friends of the Mississippi, at 612-222-2193.

August 3, Saturday, 1:30 PM
Roadside Plants: Weeds or Wildflowers?
Deep Portage Conservation Reserve, Hackensack
Some of the toughest plants are those that grow along highways of the state. Master Gardener Ione Strandberg, creator of the Deep Portage "Living Library" and Memorial Garden, will identify some of these beautiful plants and their characteristics. Fee and prior registration required. For details and registration, call 218-682-2325.

August 10, Saturday
Minnesota Prairie Day
1—*Minnesota Landscape Arboretum.*
8:30 AM to 3:30 PM, Chanhassen.
Join Ron Bowen and Chase Cornelius to learn about restoration at Schaefer Prairie, and native grasses and forbs. Tours include the Arboretum's reconstructed prairie and a bus trip to Schaefer Prairie. Lunch and transportation are included in fee of $22 for Arboretum or Nature Conservancy members, and $28 for nonmembers. Contact Janet Kampf (TNC) at 331-0767 for details and registration.

2—*Des Moines River Prairie* SNA.
This Scientific and Natural Area is a high quality hill prairie, home to numerous prairie plant species including the federally threatened prairie bush clover.
Directions: From Windom go 4 miles south on County Road 79, then 0.5 miles east on County Road 30. Public access is east of the river and road. Contact DNR at 612-296-6157, or 800-766-6000.

August 17, Saturday afternoon
Prescribed Burn Field Trip
Why do natural resource managers set areas on fire? You will learn firsthand the important role of fire in certain plant and animal communities. After a slide show, hikers will travel to a bluff prairie where a burn will take place. Call for reservations and information at the park 507-932-3007. A vehicle permit is required.

September 11, Wednesday, 12 to 2 PM.
Landscaping with Natural Vegetation, Minnesota Valley National Wildlife Refuge, Bloomington.
Join Char Bezanson (School Nature Area Program, MNPS) and Nancy Falkum (TNC) to discuss and tour landscaping with native plants at the MVNWR. Topics include partnerships with local governments, industry and schools, site evaluation, control of exotic species, and seed collecting. The tour will be a short walk on paved trails. Bring lunch and beverage. Reservations and fee are required. For details call Janet Kampf (The Nature Conservancy) at 612-332-0767.

September 14, Saturday, 10-noon
Lichens: What are they? Where are they?
Interstate State Park.
Join Jim Schuster and Nancy Albrecht for a walk through the pothole area of Interstate State Park to search for these fascinating plants. Meet in the lower parking area near the gift shop. Vehicle permits are required. For details call Nancy at (after 6 PM) or Jim at (evenings).

September 28, Saturday, 1:30 PM
Fall Colors Bog Walk
Deep Portage Conservation Reserve, Hackensack
There is no better place to observe some of nature's preparations for the coming cold season than the bog. In addition, the hiking trails will be ablaze in brilliant colors. Fee and prior registration are required. For more information and registration, call 218-682-2325.

In all field trips, wear appropriate clothing and hiking shoes, make reservations and get vehicle permits when requested, bring field guides, hand lenses, camera, binoculars, and mosquito lotion. Bring your own lunch and beverage when trips start or end at noon. Enjoy the panorama of nature!

Did you know that:

•Choke cherry (*Prunus virginiana*) is the most widely distributed tree in North America, according to Professor Charles Sprague Sargent. Its growth range extends from the Arctic Circle to Mexico, and from the Atlantic to the Pacific Ocean.

•An individual poison ivy plant may have all male flowers, all female flowers, or have both male and female flowers.

•*Potentilla* comes from the word meaning "potent" referring to medicinal uses of the plant. The high tannin content made it useful as an astringent to help stop bleeding from minor cuts.

•Chicory is one of the earliest flowers to bloom in the morning, and, according to Linnaeus, it blooms at 5 AM (later on cloudy days)—probably Swedish time. A bindweed bloomed at 3 AM.

Garden Group Meetings this summer at MVNWR Center

May 1 meeting

The Garden Group met on Wednesday, May 1, with Judie Miller, Mike Marxen, and Kathryn Mikulay from the Refuge. Several items were discussed.

Woodchucks. Any information or experience that anyone has on woodland wildflowers that woodchucks especially DO or DO NOT like to eat is solicited; contact Chris Armstrong, Mary Stanley, or Char Bezanson to offer comments.

Garden purpose and audience. The audience is the general public including casual hikers and people who want to establish native plants on their own property, on school grounds, or elsewhere.

Interpretation. The MVNWR will work this out probably by including a kiosk display with photos.

Planting schemes and plant access. "Clumps" or "drifts" of plants should be established to enable easy identification. This is a prairie garden, not a restoration. We agreed to use wood chips as a mulch for the first year(s).

Representative plants. Plants in the garden should reflect the flora of the Refuge , especially the Visitor Center grounds.

Summer plans. Plans include monitoring and identifying plants currently grown in each area, soil testing, and identification or removal of weeds. Weed wrenches and other tools are available from the Refuge. Two dates in June were selected—June 6 and June 20, both at 6:30 PM. Other members are welcome to participate at any time. Work times are 1-2 hours long. —*Char Bezanson*

June 20 meeting

The group working on the two gardens that MNPS has adopted at the Minnesota Valley National Wildlife Refuge was rained out on their first plant identification date, but four of us (Chris Armstrong, Ed Plaster, Ellen Fuge and Char Bezanson) met on Thursday evening, June 20, to begin to identify plants currently growing in the areas and to do some weeding.

The Classroom Garden has a healthy population of ostrich fern and wild geranium, as well as Canada goldenrod. There are also some jack-in-the-pulpit, spiderwort, and violets. Unfortunately, it is not really cool or shady enough at this point to be a woodland garden, as originally envisioned. The area also includes a number of weedy species. While we didn't want to remove all of the weeds until we have something to replace them with, we did pull Canada thistle, burdock, bitter nightshade, dandelion, some raspberry and blackberry, some of the reed canary grass, and a few ash and Siberian elm saplings. This garden might do very well as a "woodland edge" garden. We may want to encourage the wild geranium and violets, while adding species such as columbine.

Another tree might also be a good addition. Since we have designated this growing season for observation and weeding, those decisions will wait a while, however. The refuge has "weed-wrenches" in a few sizes, which made pulling the saplings a very satisfying experience: for those of you who have never experienced the thrill of pulling a one-inch diameter sapling out by the roots, we may have an opportunity for you later this summer when we work on the prairie garden.

The prairie garden area had a number of species that we recognized, and quite a few that we hope to identify once they bloom. There are many butterfly milkweed, Canada goldenrod, coreopsis, thimbleweed, and gray coneflower, as well as goatsbeard, potentilla, Indian grass, a variety of native and exotic brome grasses, and a number of other grasses we were not too sure of, especially since no one brought a grass-identification book. There were also grape, nettles, both ragweeds, and a variety of exotic weeds. Because of the drainage from the roof and shade near the building, some of the native non-prairie "weeds" will probably be left in place. We didn't do much weeding here, but there are many saplings, primarily Siberian elm, that we may work on later.

One highlight of the evening was watching a large (painted?) turtle lay her eggs next to the garden path. She did a good job of burying the eggs, and at the time of the Board retreat on Saturday, there was no sign of them. It seems a risky business; I hope the next generation makes it!

If you're interested in participating in the next work day, feel free to call or email me, Chris, Ed, or Ellen—once a work day is planned, we'll know about it.—*Char A. Bezanson.*

Mayflower, or the Trailing Arbutus

On landing at Plymouth, Massachusetts, the Pilgrims saw this flower (*Epigaea repens*) and named it after their ship—according to legend.

Yet God be praised! the Pilgrim said,
Who saw the blossoms peer
Above the brown leaves, dry and dead,
Behold our Mayflower here!

God wills it, here our rest shall be,
Our years of wandering o'er,
For us the Mayflower of the sea
Shall spread her sails no more.

—*John Greenleaf Whittier*

Minnesota DNR Seeks Locations for Cooper's Milkvetch

Nancy Sather

Native plant. Cooper's milkvetch (*Astragalus neglectus*) is a native Midwestern legume, which apparently has its stronghold in Minnesota's prairie-forest transition zone. Until recently, this species was thought to be one of the rarest plants in the United States. Fewer than a dozen collections were made of this plant in Minnesota before 1980, and these collections suggested that it was a rare lakeshore or prairie plant. More recent sightings by the Minnesota County Biological Survey and keen local volunteers in northwest Minnesota indicate that it is not rare in that part of the state.

State locations. Although we know now of more than 100 locations for this species, these locations are concentrated in a band extending from central Marshall County to northern Becker County. Nearly all of the recent records are from disturbed areas. Most of the sightings have been in lightly maintained rights-of-way. Cooper's milkvetch is frequently observed in areas where exposed, coarse loamy banks lie between an oak upland and a small lake. Those records that do occur in native prairie appear to be concentrated in areas where shrub or aspen invasion has occurred and recent prescribed fire has opened an otherwise woodland understory for colonization by prairie species.

Current range. The DNR is preparing a status report for this species during the winter of 1996-97, and is seeking information on locations south and east of the area where it is now known. We are especially interested in tracking the species' distribution and range southward and eastward along the edge of the Alexandria Moraine through Becker, Douglas, and Otter Tail counties and eastward. Historical collections also indicate that the species extended into the forest region as far east as Itasca State Park.

Botanical features. Fully grown Cooper's milkvetch plants can stand between one and two feet tall. Although it is not a woody plant, it generally grows in clumps that resemble a low shrub. Like other milkvetches, it has compound pinnate leaves. During the flowering season, it is difficult to distinguish it from Canada milkvetch (*Astragalus canadensis*). Cooper's milkvetch, however, is easily spotted in August and September when its large, showy pods have matured to a rich brown. Cooper's milkvetch has loose heads of nearly orbicular half-inch pods; whereas Canada milkvetch has tight, elongate racemes with narrow pods about a half-inch long and a quarter-inch in diameter.

Report procedure. Please report sightings and locations to Nancy Sather, DNR Box 7, Lafayette Road, St. Paul, MN 55155-4007; (612) 297-4963; E-mail nancy.sather@dnr.state.mn.us. Reports should include your name, a way to contact you for further information, date of observation, county, precise location information (legal description or mileage from an easily located point), and habitat. Voucher specimens are preferred and should be collected and prepared according to guidelines recently released by the University of Minnesota Herbarium. No permit is necessary for collection because neither Cooper's milkvetch nor any of its near lookalikes is protected by law. If voucher specimens are sent to the address above, we will convey them to the herbarium for you. If they are deposited directly at the herbarium, please provide a copy of your label information, Photos and sight records will also be accepted.

Nancy Sather is the Botanist for the Minnesota Natural Heritage and Nongame Research Program. She is a former president of the Minnesota Native Plant Society.

Arbutin hydrolyzes to hydroquinone, an active urinary disinfectant that is toxic and can cause nausea, delirium, even death.

Have you seen this plant ?

Cooper's milkvetch

Plant Lore

What is bearberry?
Bearberry is *Arctostaphylos uva-ursi*, a member of the Heath Family, native to wooded areas of the state.

How did it get its name?
The genus name in Greek means bear and a bunch of grapes, bear-grape, or bear's grape. We call it bearberry.

What does the plant look like?
It is a low shrub, with long, creeping, densely leaved stems. The leaves are leathery, glossy dark green on the upper surface and pale green underside. The urn-shaped flowers are white to pink and are arranged in a cluster of three to twelve. The dry berry is red.

Did Native Americans use bearberry?
It was mixed with tobacco for smoking by some tribes, and valued also for its medicinal properties.

What medicinal properties?
A tea made from it is a diuretic, used for cystitis of the urinary tract, and for nephritis. It is also an astringent. However, it contains *arbutin*—a toxin.

New Decisions made at the MNPS Board Retreat

Continued from page 1

The scheduling of board meetings before the general program has made it difficult for board members to interact with other Society members, and tends to stratify the Society. And a lack of communication about who does what in the Society, and for how long, contributes to confusion about how members can contribute without necessarily taking on more that they intend. The remaining agenda items were all looked at in relation to these concerns.

Calendar. The board decided to reschedule Board meetings, separating them from the general meetings so that Board members could participate with the general membership in both social and planning activities. Board meetings will be held quarterly, on dates different from the general meetings. The board also decided to eliminate the January meeting, which has been poorly attended, add a June meeting, and move the Plant Sale from the May meeting to the June meeting for 1997. Having the plant sale in May emphasizes spring wildflowers, but it is too early for many plants. Moving it to early June, we hope, will allow more people to bring home-grown seedlings as well as divisions, and will result in more diversity in the offerings. A June meeting might also allow for an outdoor program activity, weather permitting.

Manual of Operations. The 1994-95 Board, and especially Rick Jannett, put considerable work into writing a manual that could help orient new Board members and guide the current board. While the manual had been caught between computer formats for some time, it was available at the Retreat, and promises to be very helpful to the 1996-97 Board. Many thanks to Rick and others who contributed to the manual, and especially to Thor Kommedahl who reformatted it and arranged for hard copy! All board members will review the Manual and bring suggestions for revisions to the September board meeting.

Officer and Committee Responsibilities. We will try to better define the responsibilities of officers and coordinators, and improve communication by having Committee Chairs check with coordinators and volunteers on their committee on a yearly basis. As things stand now, we assume people will do a function forever unless they say otherwise; this can result in people doing a job longer than they would like because there isn't an easy, gracious way to pass the responsibilities on. We also want to publish a list of the main society volunteers on a yearly basis (see list in this issue) so that people know who to contact about a specific concern. We also recognize that, since this is a volunteer organization, if there is no volunteer for a function, that job may not get done.

Symposium. The Board discussed the purpose of the Symposium. One possible purpose is to provide in-depth concentration on a particular topic. The success of this kind of Symposium relies on the expertise of the speakers and the strength of their presentations; speaker selection is critical. Another purpose might be to reach out to a broader constituency with information on native plants. Yet another might be to give members an opportunity for workshop and hands-on experiences with some practical questions about native plants. Board members expressed a desire to be less involved in the details of planning the symposium or some other event; a move to quarterly board meetings makes this almost a necessity. It was suggested that we skip the symposium this year, since there is no coordinator identified at this time. A suggestion was made that this year, instead of an academic symposium, we jointly host an event that might focus on field trips or workshops, perhaps with an organization such as the Landscape Arboretum or the Nature Photography Club. This idea was met with enthusiasm. Much depends on whether coordinator(s) emerge, and what their preferences are.

This summary is from the notes and memory of Char Bezanson, and reflects her interpretation; it is not intended to be the official minutes of the meeting.—Char A. Bezanson

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Volunteer Opportunities

continued from page 8

CONSERVATION COMMITTEE

Chair. This person coordinates conservation activities of the Society, including awareness of native plant legislation and issues, as well as projects such as cooperation with other agencies on action projects such as the MVNWR-adopted gardens and Society participation in the Audubon wetland monitoring project. Contact Char Bezanson if you're interested in this.

Issues Coordinator. This person keeps track of emerging issues relating to native plants, and acts as point person for members' concerns and announcements in this area. Could be the same person as Chair. Contact Char Bezanson.—*Char A. Bezanson, President*

Do you have suggestions for speakers or topics for 1996-97? If so, contact Gary Perrault or Dave Crawford—addresses and phone numbers on page 2.

1996-97 MNPS Volunteer Opportunities

MNPS is a voluntary organization. Its work is accomplished through the Board of Directors, the Officers, and four Standing Committees: Program, Publications, Membership and Outreach, and Conservation. Board members, Officers, Committee Chairs, and the coordinators of various functions are listed in the chart on page 2. Board meetings are open to members; members wishing to present an idea to the Board are encouraged to contact the President ahead of time to ensure inclusion on the agenda.

Many of the functions of the Society are accomplished by individuals working on their own, while some require coordination with others. Society members who take on a responsibility generally have broad latitude to shape the position to their interests and abilities, so the way a committee works depends to a great degree on its volunteers. For this reason, volunteering for the Society can be an excellent opportunity for one to develop skills and experience in an interest area. The Board is also happy to consider adding functions which support our mission of preservation of and education about native plants. Projects such as establishment of a Speaker's Bureau have been suggested, and if a volunteer wanted to organize such a project, the Board would be supportive.

We currently have several committee vacancies; members interested in volunteering for these jobs are asked to contact the person listed as Committee Chair or Board Liaison for that committee, or, the function coordinator for jobs that require several persons, such as security and audiovisual people. Some functions, such as Conservation Committee Chair, have been vacant for a while; when this happens, the function disappears for a time. Society volunteers can deduct mileage or expenses as a charitable contribution on federal taxes. Also, the Society may reimburse individuals for committee expenses.

PROGRAM COMMITTEE

Symposium Coordinator. The Symposium Coordinator(s) plan the Spring Symposium. This job can be divided into Facilities Coordinator and Program Coordinator. Although direction and guidance will be provided by the Board, this person has considerable latitude, and the position provides opportunities to gain experience in event planning. If a symposium or other special event is to be held this year, a Coordinator is needed soon. One option is to host a workshop or field-oriented event, possibly by working with another group such as the Audubon Society, the Minnesota Landscape Arboretum, or the Minnesota Nature Photography Club. People in these groups are encouraged to discuss such an event with a Program Committee member.

Hospitality Coordinator/ Hospitality Volunteers. The Hospitality Coordinator arranges for treats at monthly meetings; the position could be shared by several people, and could be rotated Fall/ Spring or some other way. This person should be at the Refuge by 6::30, to start coffee, and bring treats. Coffee is purchased from the Refuge; food expenses are reimbursed by the Society. Contact John or Jackie Buffalow or Dave Crawford if you can help.

Audiovisual Volunteers. We need several people skillful in operation of slide projectors, lights, and microphones. Contact Gary Perrault if you can help.

Security Doorkeeper. We need someone to become familiar with the Refuge lockup procedure, and to staff the door as people arrive. The door-keeping function is suited to a student who is free to study during the meeting. The Board will pay a reliable student $10 per meeting; see Dave Crawford or Don Knutson

Postcard Volunteer. This person sends out the postcard announcing each monthly meeting. The person contacts the Monthly Program Chair to obtain the program title or other information, design the postcard to fit four-to-a-page, photocopy on heavy paper and cut. Labels are provided by the Membership Committee. Cards are mailed at least a week before the meeting. Expenses are reimbursed. Contact Gary Perrault or Char Bezanson for details.

PUBLICATION COMMITTEE

Writers. Articles on native plants and related issues are always welcome from members. If an article is selected as a "lead article" for an issue of the Minnesota Plant Press, an honorarium of $50 is paid to the author. Personal accounts, reports of native plant locations, book reviews, and other shorter articles are also solicited. Committee members are encouraged to write occasional short pieces about its activities. Mail or e-mail articles to the MPP Editor; for longer articles, submit copy by e-mail, computer disc, or mail.

MEMBERSHIP & OUTREACH

Chair. This person communicates with individual volunteers of this committee, coordinates committee functions, and may also initiate press releases or other publicity. This position has been unofficially shared by Diane Hilscher, Roy Robison, and others but would benefit from its own person! Contact Diane Hilscher or Roy Robison if you'd like this job.

Mail/Phone Response Volunteers. The Society receives many requests for information on the Society and native plants; these are routed by the Mail Distribution volunteer. A network of volunteers with knowledge of native plants can make this process more systematic. The Board is also considering a message phone line for announcements to members and others. We will need someone to return or refer calls requesting information about the Society. Contact Diane Hilscher or Char Bezanson if you're interested in these outreach activities.

Continued on page 7, column 2 ***Volunteer Opportunities....***

Land-use patterns. In southeastern Minnesota, the current agricultural, urban, and dispersed residential landscape contrasts sharply the mesic deciduous forests, oak savannahs, and prairies that once covered the region. Within this matrix of human land-use practices, however, many efforts are focused on conserving and restoring remnants of native plant communities. The success of these efforts depends not only on social and economic considerations, but also on changes in the ecological processes operating in human-dominated landscapes. Increasing white-tailed deer densities in residential and agricultural regions of Minnesota over the past three decades have generated concerns regarding the influence that increased herbivory may have on natural community remnants. As a result, research initiated in 1994 through the Minnesota Agricultural Experiment Station and the University of Minnesota's Department of Fisheries and Wildlife has been designed to examine the influence of deer on remnants of the highly fragmented Big Woods forests ecosystem.

Understory diversity. Big Woods forests, dominated by shade tolerant tree species such as sugar maple, elm, and American basswood, often contain an exceptional diversity of spring and summer forb species in the understory community. Our first step in examining deer impacts on this understory community was to assess the grazing intensity and species preferences of deer in four remnant Big Woods forests during the spring and summer of 1995. Although the overall intensity of deer herbivory was relatively low, deer foraged in a highly selective manner. One clear pattern emerging from these analyses was the selection for species in *Liliaceae* family (for example *Trillium, Uvularia, Allium, Erythronium*, and *Smilacina*) in the spring and early summer. Later in the summer, foraging preferences shift to late-flowering forbs such as *Laportea canadensis, Solidago flexicaulis*, and *Impatiens pallida*. However, more than 15 forest forb species were consistently ungrazed or unpreferred forage species for deer. Such selective behavior is likely to have an important role in altering the overall plant community composition in areas supporting high deer densities.

Understory herbivory. Our research has also used deer exclusion experiments, forb transplant experiments, and surveys of natural forb populations to examine the influence of deer on both particular forb species and the overall Big Woods understory community. Patterns emerging from both the species preference analyses and these experiments indicate that species such as *Trillium cernuum* and *T. flexipes* can be significantly impacted both in terms of plant density, reproduction , and population recruitment in areas supporting high deer densities. After only one year of study, the exclosure experiments are also beginning to reveal significant impacts on late-summer species in the understory community such as *Laportea canadensis, Osmorhiza claytonii*, and *Circaea lutetiana* in areas supporting high deer densities. In contrast, virtually no herbivore effects have been observed in areas where deer are currently managed at lower densities. As these studies are continued through the 1996 growing season, we hope to develop a more refined picture of the effects that deer are exerting on Big Woods remnants and determine local deer densities that will complement plant community conservation efforts.

Deer foraging patterns. During the upcoming field season, our research will also look beyond the boundaries of these forest remnants into the surrounding human-dominated landscape. Due to the mobility of white-tailed deer, understanding their influence in remnant plant communities requires both a focused look within these communities, and a broader scale perspective. Studies in 1996 will include surveys of Big Woods remnants throughout Hennepin and Rice counties and analyses of landscape features such as the relative distribution of particular agricultural crops, residential neighborhoods, and other forest types in the regions surrounding the Big Woods remnants. Understanding the influence that landscape features can have on deer foraging patterns will provide additional insight into management activities that will effectively address the influence of white-tailed deer on native plant community conservation efforts.

This is a summary of a presentation to the Minnesota Native Plant Society by David Augustine, on April 4, 1996, at the Minnesota Valley National Wildlife Refuge. David is in the Department of Fisheries and Wildlife of the University of Minnesota, St. Paul Campus.

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